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ABSTRACT

This document examines what is known about alcohol and other drug abuse (AODA) among adolescent females. The first half of the document discusses the following topics: (1) prevalence and patterns of alcohol, tobacco, and other drug use among female adolescents; (2) correlates and risk of substance abuse, including age of initiation, appropriateness, coping, dating, decision making factors, educational attainment, family factors, peer pressure, self-concept, sexual behavior, and sexual/physical abuse; (3) prevention and intervention implications, including context of use, differential effects, dissemination of information, educational attachment, family education, peer pressure, resistance skills, risk reduction, self-esteem enhancement, sexual abuse, sexual behavior, stress reduction, drug specific considerations, and targeting high risk populations. The second part of the document presents lengthy, detailed abstracts of recent research studies on these topics which have been published in journals. Approximately 200 references are listed. (ABL)

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Western Regional Center
DRUG-FREE SCHOOLS AND COMMUNITIES

ED 338 960

Prevention Research Update
No. 9
Fall 1991

SUBSTANCE ABUSE AMONG ADOLESCENT FEMALES

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Prevention Research Update
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SUBSTANCE ABUSE AMONG ADOLESCENT FEMALES

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Prevention Research Update is a quarterly current awareness service, prepared by the Western Regional Center for Drug-Free Schools and Communities, which summarizes recent research on adolescent drug abuse and its prevention. Each issue abstracts and reviews the prevention implications of new research dealing with a major topic of concern in the field, placing the new information in the context of past findings. The goal is to help bridge the communications gap between the researcher, the practitioner, and the general population, by disseminating research findings in an accessible manner and providing an introductory review of their significance. Abstracts are arranged alphabetically by first author's last name. Preceding the abstracts is an overview discussion in which references to abstracted studies are identified by an asterisk (*). References to all documents cited are located following the abstracts. Copies of the Updates are available from all the Western Center sites, listed on the last page of this issue.

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OVERVIEW

INTRODUCTION

This *Prevention Research Update* examines what is known about alcohol and other drug abuse (AODA) among adolescent females. Unfortunately, as is true of most special populations, the knowledge base is relatively small. This group has not been studied in any detail in recent years. Although some older studies targeted female adolescents, current work has generally not focused on replicating, refuting, or updating earlier findings, nor has it supplied much new knowledge. This situation is problematic for three reasons. First, as adolescent drug use became more normalized, other demographic factors once distinguishing between users and nonusers in general (e.g., political orientation, religiosity, SES) declined in predictive ability (Bachman, Johnston et al. 1988). Thus, the older studies may no longer reflect the current situation. This underscores the danger of drawing on yesterday's literature for an understanding of today's adolescent. Second, indications are that female AOD use, as will be seen, has increased. Third, AOD research on adults has revealed differences between female and male use which may pertain to adolescents as well. For example, some studies have found that: (1) particular forms of treatment are less effective for women than for men; (2) some correlates of use and abuse are more significant for adult women than for men; and (3) motivations to diminish or relinquish substance use sometimes differ between adult women and men (Wallen 1990; Rosenbaum and Murphy 1990; Eisenstadt 1990;Engs 1990; Ferrence 1980; Wilsnack and Beckman 1984; Glynn, Pearson, and Sayers 1983). Such studies have explored correlates of use of special significance for women and have begun to distinguish prevention measures and treatment modes in terms of relative success or failure for women, as opposed to men. However, few of these have included women below college age. The possible insights provided are thus of untested generalizability to the younger female. More current studies focusing on ADOA differences between adolescent females and males are needed.

Most current research on adolescent alcohol and other drug use does not generally treat female adolescents as distinct from males. Studies which include both females and males, in order to draw a sample representative of adolescents *as a group*, often provide only group results without further breaking out results by gender. Work which specifically compares adolescent female and male AOD use tends to focus almost exclusively on the relative prevalence of use, age of initiation, and patterns of use. Those few studies examining gender differences in correlates of use and in prevention or intervention success tend to look only at differences of *degree* between females and males, rather than examining female-specific and male-specific correlates or prevention and intervention needs. For example, an evaluation study showed DARE to have less of an impact on female than on male youth (DeJong 1987*). However, the evaluation did not include findings on what female-specific needs may have been missing which, if incorporated, might increase the success of the programs for female youths. Such omissions are typical. Consequently, studies tend to ignore the potential importance of the different problems, values, and behaviors attached to gender differences in self-concept formation, socialization, and social roles. This is problematic as social-psychological literature on adolescent development consistently points to adolescence as a time of: heightened gender role differentiation among youth; gender differentiated modes of peer relations; dynamic and vulnerable self-concept formation; and redefined peer and family relationships.

Research specifically on substance use among female adolescents tends to target special subgroups, especially pregnant or delinquent populations. Although providing valuable insight, the generalizability of such findings to the broader group of adolescent females is limited. For example, prevention and treatment successes among pregnant adolescents may attach to a motivation for which there is no parallel among the nonpregnant population (Gilchrist, Gillmore, and Lohr 1990*; Moss and Hensleigh 1988;

Pletsch 1988). Similarly, the correlates of substance use and abuse most significant among delinquent adolescent females may speak more to delinquency than to use *removed* from other acts of delinquency (Dembo, Dertke et al. 1988; Gibbs 1982). Remaining AOD research targeting adolescent females focuses on consequences of use, typically in terms of female sexual behavior under the influence (Mott and Haurin 1988*; Newcomb and Bentler 1988a; Zabin, Hardy et al. 1986). Prevention, intervention, or treatment have attracted far less attention.

Conversely, adolescent female majority-minority subgroups have seldom been targeted for research. Findings of majority-minority subgroup differences among adult women, particularly in relation to alcohol use, highlight the need for similar studies of adolescent female AOD use by majority-minority subgroup (Dawkins and Harper 1983; Finnegan and McNally 1990; Womble 1990). Unfortunately, this represents another gap in current research as general population studies of adolescents generally provide gender and/or ethnic breakdowns, but rarely gender by ethnicity breakdowns (Exceptions are Welte and Barnes 1987a; Dembo, Dertke, et al. 1988; Brannock, Schandler, and Oncley 1990). In this review, we summarize what is currently known about adolescent females in general. A future Update will specifically explore ethnic subgroup differences and their implications.

Finally, the existing literature on adolescent females suffers from a number of problems and limitations characteristic of much of the literature on subgroup AOD use and abuse. Comparisons of results across studies are difficult, as is evaluating trend data, due to differences in sample characteristics, definitions of terms, measures of drug use, and types of data analysis (Dawkins 1980; Trimble, Padilla, and Bell 1987; Mosley, Atkins, and Klein 1988). For example, according to one popular measure of general population use, light drinking may include over 130 drinks annually, whereas another popular measure places a ceiling of less than 50 drinks annually on the light drinking category. The ceilings for moderate drinking are even more disparate, ranging from 144 to 660 drinks per annum. Thus articles reporting increases or decreases in drinking levels may simply reflect a shift in measures.

Given the limited knowledge about substance use among adolescent females, it is difficult to develop a comprehensive understanding of their specific needs. Nonetheless, an examination of what is available, supplemented by logical extensions of research on adult women and adolescents in general, does at least provide indications of: overall prevalence and patterns of use; correlates of use; and issues to be considered in designing prevention programs.

PREVALENCE & PATTERNS

Some general points around the issue of prevalence are a necessary preliminary to further discussion. Studies vary in presenting comparisons between female and male adolescent AOD use, particularly when comparing specific regions rather than national samples. Much of the data is inconsistent: while Engs and Hanson (1990) cite 6 studies which equate college female with male drinking patterns, they also cite 5 studies in which female drinking exceeds male drinking. Finally, they conclude that the weight of the evidence still shows fewer female than male drinkers and indicates that females tend to be lighter and less frequent drinkers than males, but that these distances are narrowing. Our survey of the literature replicates this for adolescents, as well as for other drugs, with the notable exception of cigarettes and amphetamines.

Research reports have traditionally shown significant differences in the AOD use rates between adolescent females and males. Consensus long has been that fewer females than males use and abuse substances, and that as the frequency or intensity of use increases, females are represented in a decreasing proportions (Glynn, Pearson, and Sayers 1983; Lettieri and Ludford 1981; Mellinger and Balter 1981; Yamaguchi and Kandel 1984). That adult males generally are much more often and more heavily involved in substance abuse than adult females is supported by the periodic National Household Drug Abuse Surveys (NIDA 1991). However, among adolescents the differences have become less pronounced across the board, and the current consensus is that female adolescents are closing the gap for a number of substances and in some cases equal and even surpass their male counterparts.

Reflecting gender convergence, many studies find no evidence of adolescent gender differences in regard to use prevalence. For example, Hundleby (1987) concluded that "very few differences between the sexes are observed -- and these were small in magnitude." Coombs, Fawzy, and Gerber (1986) observed very slight differences among 400 children and adolescents (ages 9-17) surveyed over an 18-month period (1980-1981) in regard to four drug categories: cigarettes, alcohol, marijuana/hashish, and other drugs. Ethnicity and social class also seemed relatively unrelated to substance use, which they believe "attests to the remarkable diffusion of behavioral standards and opportunities in American society, a phenomenon of considerable historic interest and importance" (p. 911). Similar results are reported by Paulson, Coombs, and Richardson (1990) and by Newcomb, Maddahian, et al. 1987*.

This general trend toward convergence in overall use prevalence rates obscures, however, important variations in regard to specific substance and levels of use. Alcohol remains the drug of choice for high school females followed in descending order by cigarettes, marijuana, and amphetamines. Furthermore, with the exception of amphetamines and cigarettes, rates of heavy or frequent use are much lower among females than males.

Alcohol

Although surveys tend to place female drinking at a lower proportion than male drinking, among adolescents evidence has been mounting that female prevalence rates have been narrowing and now resemble rates for males (e.g., Downs 1985; Figueira-McDonough 1985; Johnston, O'Malley, and Bachman 1987; Rachal, Guess et al. 1980; Murray, Perry et al. 1987; Newcomb, Maddahian et al. 1987*; Pascale, Trucksis, and Sylvester 1985*). A substantial majority of adolescent females now indicate that they are drinkers. However, more important than the narrowing gender gap in alcohol use prevalence are the actual female adolescent drinking levels and patterns. According to Gail Gleason Milgram (1990), 25% of college females experience intoxication four or more times a month (p. 90). Given that "intoxication is a more accepted outcome of a drinking experience for adolescents than for adults," it can be predicted that a significant number of adolescent females regularly become intoxicated (p. 86). As observed by Ferrence (1980, 1985: 441), among adolescents, drinking prevalence rates are high but gender differences slight; rates of heavy drinking are lower, but gender ratios are high. Indeed, Ferrence (1980) estimates that gender ratios of adolescent drinking problems range from 1:5 to 4:0, suggesting to Thompson (1989*:30)"that gender is one of the most meaningful variables examined by alcohol researchers." Current evidence indicates that Ferrence's observation still holds true. It appears that females consume alcohol significantly less often and in lesser amounts per occasion than males. Gender differences in alcohol-related problems, however, are less clear.

National Surveys

In the 1978 followup to the 1974 national adolescent (grades 10-12) drinking survey, conducted by Research Triangle Institute (RTI), 73% of 12th-grade females and 77% of males were drinkers. Only 9% of 12th grade-females were classified as heavier drinkers (drank 5 drinks or more at a time at least once a week), compared with 21% of males, but gender differences had declined since 1974 (Rachal, Guess et al. 1980; Rachal, Maisto et al. 1982). An additional 16% were classified as moderate/heavier drinkers, compared to 19% of males, indicating that gender differences are most pronounced at the higher levels of use. Reanalysis of this data suggested that 25% of females were drunk or very, very high from drinking at least six times in the preceding year (Thompson and Wilsnack 1984:39).

Data from a representative phone survey of 1,003 teenagers aged 13-18 collected in 1980 as part of the national Gallup Youth Survey revealed that across these ages females were less likely than males to be drinkers and were somewhat less likely to be heavier drinkers at older ages (17 and 18). By age 18, 73% of females and 92% of males were drinkers, but rates for heavier drinking (at least once a week, with large amounts per drinking occasion) were only 6% for females, compared to 20% for males. For the total age group, rates of heavy drinking were 3% and 8%, respectively. Among younger teens, there was no clear gender differences in level of use. Heavier use increased dramatically among males at age 17, but not among females. Among girls age 16-18, 6% reported being drunk once a week or more, vs. 11% for males (Zucker and Harford 1983). The drunkenness data was quite close in both pattern and magnitude to the 1974 RTI data, suggesting little change over the six-year period.

In the 1988 National Household Drug Abuse Survey, among persons aged 12-17, some lifetime use was reported by 47% of females and 53% of males. Use in the past year was reported by 41% of both females and males; rates for past month were 24% and 25%, respectively. Rates for heavy use in the past month were 2% for females and 3% for males, respectively. Heavy use was defined as consuming 5 or more drinks per occasion on 5 or more days in the past 30 days. Females were about four times less likely than males to be heavy drinkers for the total sample and for each of the age groups. For those aged 12-20, 29% of females compared with 37% of males reported any use in the past month; rates for heavy use in the same period were 2% and 9%, respectively. This indicates heavy use among males, but not females, increases sharply after age 17, as found in the 1980 Gallup survey. Whereas current prevalence rates for persons age 21 and over were substantially higher (47% of females; 63% of males), rates for heavy use remained the same (NIDA 1990).

Between 1979 and 1990, lifetime use among youth age 12-17 had consistently dropped, according to the Household Survey. Over the same period, use in past year and past month had declined only slightly, but with 1988 levels significantly down from 1985. Compared to 1988 data, 1990 rates remained essentially the same for females. Estimates of rates of alcohol drinking once a week or more in the past year calculated for 1990 data were 4.5% of females compared to 5.6% of males. But use by males declined. In short, in both 1988 and 1990 surveys, about half of those aged 12-17, male and female, have used alcohol at some time in their lives. However, it appears that males are reducing the use compared to females (NIDA 1991).

Data from the 1982 and 1983 National Longitudinal Survey of Labor Market Experience in Youth (N=12,686, ages 17-24) was analyzed by Grant, Harford, and Girgson (1988*) to explore alcohol use patterns over a 2-year period during the transition years between adolescence and young adulthood. (Heavy use was defined as drinking 6 or more drinks at least 2-3 occasions during past month). More females (7.2%) than males (4.9%), were lifetime abstainers. Prevalence rates for current drinking remained stable among both sexes over this period, although youth moved into and out of various drinking level categories: 81.4% of females and 90.7% of males reported current drinking in 1982 and remained at that level in 1983. Percentages of heavy drinking for females (19.4%) were less than half of what they were for males (44.6%). The incidence of heavier drinking in 1983 was not as great for females (16.5%) as for males (31.3%). Among drinkers, smaller percentages of females (58.2%) than males (76.5%) continued heavier drinking between 1982 and 1983, suggesting greater stability in heavy drinking among males than females.

Student Surveys. In the annual National High School Seniors Survey, since 1975 gender differences in lifetime (any) alcohol use have narrowed slightly and have been virtually eliminated in annual prevalence. The 30-day (current) prevalence rates for females and males differed by 13% in 1975 (62% vs. 75%) and by 8% in 1988 (60% vs. 68%), and by 9% in 1990 (52% vs. 61%). On the other hand, gender differences in daily use and occasions of heavy drinking still remain substantial, with these levels of use disproportionately concentrated among males. Daily use was reported by 2% of females vs. 5% of males, and 24% of females, vs. 39% of males, reported heavy drinking, defined as taking five or more drinks in a row in the prior two weeks. Furthermore, there was also some narrowing of the differences in daily use and occasions of heavy drinking. The proportion of males admitting to heavy drinking between 1975 and 1985 showed a net decrease of 10%, whereas females showed a net decrease of only 2%, from 26% to 24% (Johnston, Bachman, and O'Malley 1991:40-41, 46, 78). However, this in itself is a positive trend for females. Between 1975 and 1985, a net increase of 2% had occurred among them (Johnston, Bachman, and O'Malley 1989:81).

Regional Surveys

In the 1987-88 and 1989-90 Biennial California Student Substance Use Survey, 9th- and 11th-grade females reported a significantly lower mean frequency of beer and spirits consumption than males; females drank more wine (Skager, Frith, and Maddahian 1989:44). When 1987-88 results were compared with 1989-90, beer drinking declined significantly among 11th-graders of both sexes. Among 9th graders, beer and spirits drinking declined significantly among females, but not males (Skager, Austin, and Frith 1991:65). Other local California student surveys have shown significantly higher frequencies and levels of alcohol use among males, notably, the surveys by Michael Newcomb, Peter Bentler and colleagues at UCLA (Newcomb, Fahy, and Skager 1990*:60; Newcomb, Maddahian et al. 1987*:423).

In New York State, among 27,335 7th- through 12th-grade students surveyed in 1983 by Barnes and Welte (1986), females were somewhat less likely to be drinkers (68%) than males (74%), with the largest gender differences in prevalence rates occurring among 12-year-olds. Rates of moderate drinking and moderate-heavy drinking were the same, but the rate of heavy drinking (typically, drinking a large amount at least once a week) among females (8%) was less than half as great as the rate for males (18%). Up through age 14, there was no substantial difference in heavy drinking, but the female rate of heavy drinking was almost half of that among males aged 15 (9% vs. 17%), and this disparity remained even though rates became increasingly greater each year thereafter, rising to 16% of females versus 38% of males at age 18. Female drinkers also had a significantly lower rate of daily average absolute alcohol consumption.

In a random household survey in New York of 124 female and male adolescents between ages 12 and 17 in 1981, comparisons of prevalence rates of alcohol consumption manifested similar proportions of drinkers, but again, females were less likely to engage in heavier drinking (Windle and Barnes 1988*:716).

In other studies, a longitudinal survey of students in two New England towns from 6th- through 8th-grade (1980-1982) revealed that females showed a lower use of alcohol in 6th and 7th grades, but not in 8th grade (Grady, Gersick et al. 1986:210). Forney, Forney, and Ripley (1988*) found, among 3,000 southern students in grades 6, 8, 10, and 12, that the student most likely to be self-classified as a heavy, problem drinker was male, white, aged between 14 and 15 years, and had parents and best friends who were heavy drinkers. For the entire sample, 37% of females were heavy drinkers, versus 63% of males. Unfortunately, age-sex breakdowns are not provided. Beck and Summons (1987*:37) found among 2,300 high school students that significantly more males consumed 6 or more drinks of beer, wine, or spirits per drinking occasion; whereas there was little gender difference at the lowest use levels.

Beverage Preferences

Gender differences have also been identified in alcoholic beverage of choice. Beer is the beverage of choice for adolescents of both genders; however, it remains less popular among females than males. Evidence regarding spirits is contradictory. Some research indicates that adolescent females are less likely to drink distilled spirits than males (Margulies, Kessler, and Kandel 1977). Other research suggest that spirits drinking is just as popular or more popular among females. In the 1978 RTI adolescent drinking survey, mean daily ethanol consumption for beer by 10th- through 12th-grade females was much less than males for beer, but the same for spirits for both users and misusers (Rachal, Maisto et al. 1982:89). As noted in the 1987-88 Biennial California Student Substance Use Survey, 9th- and 11th-grade females reported a significantly lower mean frequency of beer consumption than males, but this did not extend to spirits (Skager, Frith, and Maddahian 1989).

In the 1988 National High School Seniors Survey, the large gender differences in occasions of heavy drinking were primarily accounted for by differential rates of beer consumption: 22% of females had 5 beers or more in a row during the prior two weeks versus 42% of males. In contrast, females were only somewhat less likely than males to report having 5 or more drinks of hard liquor (17% of females vs. 20% of males) and females and males were equally apt to drink wine as heavily (8% for each). Furthermore, females were slightly more likely to report drinking five or more wine coolers in a row in the past two weeks (15% vs. 12% for males). This pattern, with the exception of wine coolers, which was a new item, has been present throughout the study (since 1975) with little systematic change over time. Unfortunately, lifetime and current prevalence rates by specific alcoholic beverage are not reported (Johnston, Bachman, and O'Malley 1989:81).

A survey by Beck and Summons (1987*) revealed that, similar to total alcohol consumption, high-school females consumed significantly less beer, wine, and spirits than males per drinking occasion. Approximately 12% females and 38% males consumed six or more beers per drinking occasion. Females consumed beer and wine significantly less frequently than males, but the genders did not differ significantly in frequency of liquor consumption.

Levels of Intoxication

Overall, the data reviewed above consistently indicate that females tend to consume significantly fewer drinks per occasion than males. However, this does not necessarily mean that rates of intoxication are parallel. Females, on the average, weigh about 20 percent less than males of equal age and also have proportionately less body fluid. This means that less of alcohol or other drugs is required to attain a particular concentration in the blood (Ferrence 1985). In a recent, widely-publicized study, Frezza, diPadova, et al. (1990) found that after consuming comparable amounts of ethanol, even with allowance for differences in size, women have higher blood ethanol concentrations than men and thus more quickly feel the effects of alcohol or become drunk. To reach a given blood-alcohol level, women need to drink only about half of what men drink. This appears to be due to decreased gastic oxidation of ethanol; that is, a lesser ability to neutralize alcohol in the body. Women are also more susceptible to alcoholic liver disease.

The implications of this condition on consumption are not clear. As Thompson and Wilsnack (1984:58) observe, "...it is not known whether such gender-related differences in blood alcohol levels influence girls to drink less than boys (because girls may experience intoxication from less alcohol intake), or whether the differences make girls more vulnerable than boys to drinking problems, drunkenness, or alcohol dependence from a given pattern of alcohol consumption" (see also Roman 1988:15). Though much about this issue is not yet understood, implications for prevention are already clear. Johnston, Bachman, and O'Malley (1989:81n13) observe that although far fewer females drink at the five-drink per occasion rate, "It is worth noting that the same number of drinks produces substantially greater impact on the blood alcohol level of the average female than the average male. Thus, sex differences in frequency of actually getting drunk may not be as great as the binge drinking statistics would indicate, since they are based on a fixed number of drinks."

This physiological difference has implications for definitions of levels of use. Wilsnack (1986:17) notes: "Few surveys have addressed the question of whether the same or different criteria should be used to define drinking levels for women and for men," incorporating corrections for gender differences in body weight and body fluid composition. In this regard, clarifying the preference for spirit drinking among adolescent females is especially important, for it too could affect the propensity for intoxication. Interestingly, although spirits was the only beverage females consumed more frequently than males in the study by Beck and Summons (1987*), females still drank significantly less of it per occasion.

Nevertheless, studies asking specifically about intoxication history have shown females to have lower rates than males. For example, fewer females than males reported to Beck and Summons (1987*) being drunk once a week or more frequently (16% vs. 21%). However, other studies have reported 25% of females claiming to have experienced intoxication 4 or more times in the previous month (see Milgram 1990:90).

Related Problems

Because of their consumption of lower amounts of alcohol, adolescent females generally are at lower risk for drinking problems than males. Yet given the evidence about physiological effects, one might expect higher rates of alcohol-related problems associated with a specific level of use among females. One reason female adolescent drinking has not been given due attention until recently is that females have historically not been as likely as males to manifest particular drinking-related problems (Radosevich, Lanza-Kaduce et al. 1980; Wisniewski, Glenwick, and Graham 1985). This perception, however, may be due to lack of study of heavy drinking among this population. Very little attention has been directed to this question and the available evidence is inconsistent.

For example, most of the gender-related information on drinking and problem behavior has dealt with drinking and driving. For females, drinking is less likely to result in drunk driving accidents (Kane and Patterson 1972; Smart and Liban 1981). Beck and Summons (1987*) reported fewer adolescent females than males driving under the influence at least once a week or more (0.7% vs. 3%). However, these findings may be somewhat misleading where drinking is part of dating behavior. Among dating adolescent couples, the male typically takes the role of driver, and drinking females frequently put themselves at risk as passengers of drunk drivers (see Engs 1990).

Evidence in regard to other problem behaviors is more mixed. Beck and Summons (1987*) reported that besides drunk driving drinkers of both genders did not differ significantly on other alcohol problem symptom. Other evidence indicates that, for females, drinking is less likely to result in damage to social relations (Donovan, Jessor, and Jessor 1983; Wisniewski, Glenwick, and Graham 1985); or trouble with the law (Schuckit, Morrissey et al. 1977). For both users and misusers in the 1974 and 1978 RTI adolescent drinking surveys, males generally reported a higher frequency of alcohol-related problems (Rachal, Maisto et al. 1982:91). For example, 20% of the 10th - 12th-grade females who consumed any alcohol in the preceding year reported having difficulties with friends because of drinking, 12% had been criticized by their dates because of drinking, and 21% reported driving after having a "good bit" to drink (Rachal, Guess et al. 1980). Barnes (1984:338) found no significant adolescent gender differences in regard to an alcohol-related problem score, in a household sample of 124 in New York. Furthermore, there was a significant correlation between heavy drinking and deviance among both sexes. Females had mean deviance scores of nearly the same magnitude as males at the same use-level.

It may well be that the genders differ depending on the nature of the alcohol-related problem. Mitic, McGuire, and Newman (1987) found that adolescent females significantly lagged behind males in the self-reported frequency with which violent acts or personal injury resulted from alcohol consumption, but matched or exceeded them in nonviolent and personal conflict areas, including tension with family or friends, drinking alone, being in trouble with the police, and morning drinking.

Whether or not female adolescents are less heavy drinkers or experience fewer drinking-related problems than males, it is clear that many adolescent females are putting themselves at risk through alcohol consumption. Indeed, it is evident that heavy drinking females are at no less risk than heavy drinking males. Roman (1988:15) even warns that "women may experience greater problems than men when they drink heavily." As more has become known about adolescent drinking and drinking-related problems, females are recognized to have a share of such problems. Further, as concern over teenage pregnancy rates and AIDS has increased, concern over the role of alcohol in contributing to adolescent female sexual activity has also increased (Flanigan and Hitch 1986). Unfortunately, studies reporting gender differences in rates of problematic behavior related to drinking do not examine why such differences exist.

Tobacco

Studies on smoking behavior consistently identify this as the leading substance-use problem among females. During the late sixties, with the advent of smoking as acceptable social behavior for women, female smokers gradually came to outnumber male smokers and lung cancer became the leading cause of cancer mortality among young women (American Cancer Society 1985). Cigarettes bore the distinction of being one of only two substances used more by adolescent females than males. Regular smoking among adolescents increased from 4% in 1968 to 32% in 1974, almost entirely due to increased smoking among teenage females (Gritz 1980; Gomberg 1986:86; Johnston, Bachman, and O'Malley 1989). There was also a sharp increase in the proportion of female heavy smokers; for example, at the half-a-pack-daily rate, 12th-grade females caught up to males for the first time in 1977. At the heaviest ends of the scale, a pack a day or more, males were, and still are, more likely to be heavy smokers. The upward trends among female smokers peaked in the late 1970's, and smoking rates began to decline for both genders. This continues to be true; however, the rate of decline has been slower among female adolescents than among male adolescents so that females generally exceed or at least equal males in overall prevalence rates. Therefore, unlike their use of other substances, adolescent females often have been found to outnumber or equal males in the use of smoking tobacco, even at most points of the heavy use end of the scale. Smokeless tobacco tends to be ignored by female adolescents, perhaps because the mode of use is still less socially acceptable for females than for males.

National Surveys

In the 1990 National Household Survey, among youth age 12-17, 36% of females reported any cigarette use in their lifetime; 21% reported use in the past year; and 11%, current use in the past month. The 1990 data reveals little change from the 1988 data, except for a decline in ever use, from 39% to 36%, among females adolescents. Use of smokeless tobacco was almost nonexistent among female adolescents (NIDA 1991).

In recent National High School Seniors Surveys, more females have reported smoking cigarettes than males. In the 1988 survey gender differences in smoking rates had narrowed. Males showed an increase and females a decrease. Johnston, Bachman, and O'Malley (1989:43) observed, "Whether this shift is real or a statistical aberration from a single year's sample is yet to be determined." Nevertheless, slightly more females still reported any current smoking in the past month (29% vs. 28% for males). In the 1990 survey, there were no significant changes. Past month prevalence rates were equivalent between genders at 29% and daily rates at about 19%, although slightly more males smoked at the half-a-pack per day level (12% vs. 11%) (Johnston, Bachman, and O'Malley 1991:41, 46, 79-80).

Regional Surveys

Regional studies have generally reflected trends and patterns noted in national surveys, and show the proportion of female smokers increasing relative to males as grade levels increase. Among the 6th-8th grade New England students surveyed regarding AOD use in 1980-1982, female 7th and 8th graders showed statistically higher use than males only of tobacco (Grady, Gersick et al. 1986). Among 5,431 students (grades 5, 8, and 12) in Missouri, there was a a consistent trend of higher smoking prevalences during the previous week among male 5th and 8th graders relative to females; however, among 12th graders, smoking was slightly more common among females (30% vs. 28%). In contrast, use of smokeless tobacco was almost exclusively male (Brownson, DiLorenzo et al. 1990). In a 1983 survey of 11th graders in Ohio, 4% more females than males (44% vs. 40%) smoked cigarettes (Pascale, Trucksis, and Sylvester 1985*). A survey of 27,335 New York State junior and senior high school students revealed that female students smoked at a much higher rate than males (29% vs. 20%) and led males at every age from 13 to 18. Also in agreement with national surveys, females were found slightly less often than males among the heavy smokers (8.3 cigarettes per day for females vs. 10.5 for males). Holding other factors constant, gender was a fairly strong predictor of smoking vs. non-smoking, but could not predict quantity smoked (Welte and Barnes 1987b). Echoing this among 903 New York City high school students, gender was significantly correlated with lifetime smoking ($p<.001$) (Kleinman, Wish et al. 1988). Similar findings were also reported by Young and Rogers (1986) for high school students in Pennsylvania.

In California, the 1987-88 state student survey of 7th, 9th, and 11th graders, found no significant gender differences for mean frequency of use of cigarettes at any grade level (Skager, Frith, and Maddahian 1989). However, in a California AOD survey of 2,926 students in 7th, 9th, and 11th grades in Ventura County, females reported significantly more frequent use of cigarettes (Newcomb, Maddahian et al. 1987*). In a 3-year longitudinal study of 557 mothers and their children, AOD gender differences were only found for higher tobacco use among females in late adolescence (Newcomb and Bentler 1988c). Farrow and Brissing (1990) found in a sample of 343 10th-graders that females more often were tobacco users, and were also found to be heavier users than males (33% vs. 22.5%).

In a survey of 124 female and 91 male adolescents (ages 12-20) presenting for health care at a family physicians network, 27 % of females versus 16% of males were current smokers. In addition, 16% of females, 6% of males smoked on-half to one pack a day. More males than females smoked more than one pack a day, but rates for both sexes were very low (2% and 1%) (Tuakli, Smith, and Heaton 1990). Not only did females exceed males in smoking, but in current prevalence of alcohol and marijuana use. However, this higher percentage of use for females may be a factor of adolescents presenting themselves for medical problems.

Although more adolescent females smoke than do males, among smokers, Welte and Barnes (1987b) found heavy drinking to be the best predictor of quantity of cigarettes smoked for both males and females. This may partly explain evidence that smoking, like alcohol use, is more prevalent among white than black adolescent females (Dembo, Dertke et al. 1988). Further, for female adolescent multiple drug users, alcohol and cigarettes are the favored combination, whereas males prefer alcohol and marijuana. For adolescent females, some of the features of cigarette smoking differ markedly from those associated with alcohol and other drug use. These features will be discussed in the correlates of use section of this update and involve: differences in female initial use of tobacco versus other drugs; female versus male motivations to smoke; differences in female motivations to use cigarettes versus other drugs; and female adolescent beliefs in the relative lack of perceived harmfulness of smoking compared to using other substances.

This gender difference may be due, in part, to the fact that women have tended to have less success in stopping smoking. Since the first Surgeon General's Report on Smoking, there has been only a 5% decrease in smoking among women, compared with a 20% decrease among men (Hynes 1989). Data regarding the perceived difficulty of quitting smoking and quit rates among the Missouri students survyed by Brownson, DiLorenzo et al. (1990) suggested that adolescent females have more difficulty quitting than males.

Other Drugs

Female and male prevalence rates of the most popular drugs other than alcohol and tobacco have also converged over the years. This is particularly the case with marijuana and undoubtedly reflects the rise in use acceptability among adolescents in the 1970s and 1980s. However, most evidence indicates that use among females, especially heavy use, remains relatively lower for most illicit drugs than it does use for alcohol and tobacco. Furthermore, although the number of adolescent illicit substance users of both genders decreases as consumption levels increase, this relationship is more marked for females. The major notable exception is higher female rates of use for amphetamines. As Johnston, Bachman, and O'Malley (1989:41) observe, although lower proportions of females than males are involved in illicit drug use, "this picture is a complicated one."

National Surveys

Marijuana. In the National High School Seniors Survey, absolute and ratio differences between genders in marijuana use narrowed somewhat during the eighties, although use declined among both genders over the decade. In 1990, the proportion of females ever using marijuana was only slightly lower than males (37% vs. 44%, compared with 45% and 50% in 1988). However, daily use in the past 30 days was three times more frequent among males (3% vs. 1%). Reported rates for every having used daily for at least a month were 11% for males and 8% for females. Furthermore, between 1982 and 1990, declines in lifetime daily use were stronger among femals (from 18% to 8%) than males (20% to 11%) (Johnston, Bachman, and O'Malley 1991:39, 40, 77, 180-181).

The 1990 National Household Survey found for youth age 12-17 marijuana rates to be similar across genders for lifetime use (14% female vs. 15% male), past year (11% for both), and past month (4% and 6%). This represented a noticeable decline across the 1980's in all categories of marijuana use among females and less of a decline among males (NIDA 1991:23). In the 1988 survey, lifetime rates were 18% for females versus 17% for males; past year,14% vs 11%; past month, 7% and 6% (NIDA 1990). Gender differences in frequency of use were not reported.

Other Drugs Combined. The 1988 National High School Seniors Survey showed females to have considerably lower prevalence rates on most illicit drugs other than marijuana, and an even lesser share of frequent or heavy use. For all other illicit drugs as a whole, the proportions of both genders who reported using during the last year were not substantially different (16% females vs. 19% males, both down 3% from 1988). Johnston, Bachman, and O'Malley (1991:39) comment: "If one thinks of going beyond marijuana as an important threshold point in the sequence of illicit drug use, then roughly equivalent proportions of both sexes were willing to cross that threshold at least once during the year." However, females generally consumed fewer types of drugs and did so with less frequency. Lifetime use rates peaked among females at 51% in 1981 and declined to 30% in 1990 (vs. 34% for males) (

However, the 1990 National Household Survey (which employed a community sample of adolescents aged 12-17) found fewer gender differences than did the 1988 high school survey, although among older age groups males were significantly more likely to be users. Female adolescents had a slightly higher prevalence rate for any illicit drug in the past year (17% vs. 15%), but slightly lower rates for the past month (7% vs. 9%) and lifetime (22% vs. 23%). The difference in drug use prevalence rates between the two samples could be due to a lower adherence to traditional roles and a relative lack of concern for social acceptability among out-of-school adolescent females (NIDA 1991:17).

Cocaine. Findings on cocaine use also vary between the two surveys. The National High School Seniors surveys show that the ratio of female-male lifetime prevalence rates in cocaine use diminished somewhat in the early 1980s and narrowed further in the late decade, but still found females (7%) to be ever using substantially less cocaine than males (12%). This compares with 10% and 14% in 1988. Annual use prevalence was 4% and 7%, respectively. Current use rates were 4 and 3% (Johnston, Bachman, and O'Malley 1991:40, 77). Conversely, the household survey reported little difference in lifetime and past year rates of adolescent female (2%) and male (3%) cocaine use (NIDA 1991:29).

Psychotherapeutics/Stimulants. For drugs other than tobacco, only in the case of stimulants and tranquilizers have studies consistently shown annual prevalence rates for females matching or exceeding those for males (Clayton, Voss et al. 1986). Generally, the seniors and household surveys for 1990 reported higher prevalence rates for females than males for prescription-type psychotherapeutics, especially for current use. Since 1982, females have reported slightly higher or equivalent rates of stimulant use in the National High School Seniors Survey. In 1988, the only two drugs for which annual prevalence rates for females matched male rates of use were stimulants and tranquilizers, at around 11%, and 5%, respectively, for each gender. However in 1990, this was the case for tranquilizers and methaqualone. However, the differences regarding stimulants were not great. Annual prevalence rates for 1990 were 9.4% for males and 8.6% for females. Lifetime rates were both at 17%. Adjusted rates for amphetamines at all levels of use were similar for both genders, at 4%, 9%, and 18% for current, annual, and lifetime prevalence. However, females greatly exceeded males in use of over-the-counter diet pills, with rates of 7% current, 17% annual, and 28% lifetime (Johnston, Bachman, and O'Malley 1991:41, 77). An analysis by Taub and Skinner (1990*) of data from 1,624 females who participated in the 1984 senior survey revealed that 19% had tried amphetamines, with initiation beginning for two-thirds in the 9th and 10th grades.

In the 1990 Household Survey, lifetime use rates for any psychotherapeutics among 12- to 17-year olds were 11% for females versus 10% for males; for past year use, the female rate was 8.5% versus the male rate of 5.5%. For stimulants, rates were 5% female lifetime use versus 4% male lifetime use, and 4% female past year use versus 2% male use (NIDA 1991:53).

Regional Surveys

Regional studies of other drug use generally reflect the gender findings for the adolescent population as a whole, that is that although there is a trend toward convergence, females tend to take fewer substances less often than males, excepting amphetamines. Of other illicit drugs, gender differences are smallest in regard to marijuana, with use by females still less than males.

In a 1983 survey of 1,911 Ohio 11th graders in 15 schools, amphetamines were the most popular other drug consumed by females, with 10% more females than males reporting taking them (36% vs. 26%). For all other drugs, however, female use was lower than male use. Marijuana was consumed by 29% of females as opposed to 34% of males; tranquilizers by 11% vs. 13%; hallucinogens by 7% vs. 11%; cocaine by 6% vs. 10%; inhalants by 5% as vs. 9%; and PCP by 2% vs. 5% (Pascale, Trucksis, and Sylvester 1985*). Similar results were found for self-reported lifetime use of marijuana, amphetamines, and cocaine within a sample of almost 7,000 high school sophomores in Arizona and Utah in 1984. The level of other drug use was lower among females than males for all drugs, with the possible exception of amphetamines, which were more likely to be used by females aged 16 and over (for weight reduction). However, at younger ages only very small proportions of adolescents used a drug other than marijuana (Johnson and Marcos 1988*).

In California, in a 1985 sample of 2,926 7th, 9th, and 11th graders in Ventura County, females reported higher levels only of stimulants, although these differences were not significant. There were significant differences in frequency of use by gender in two of five illicit drug categories: females used cannabis and psychedelics significantly less often than males ($p<.001$. No gender differences were found for cocaine or hypnotics (Newcomb, Fahy, and Skager 1990*).

The 1987-88 Biennial California Student Substance Use Survey found 11th-grade females to maintain previous rates of amphetamine use despite declines in amphetamine use by 11th-grade males. The biennial state surveys have included gender analyses for mean use in all its reports since 1985-86 for the seven most commonly used drugs. In the 1987-88 survey, female mean frequency of use of marijuana was significantly exceeded by the male mean in the 9th and 11th grades. Among 11th graders in the 1989-90 survey, significant declines occurred in the final use of all seven substances (amphetamines, beer, cocaine, hashish, PCP, other psychedelics, and spirits), but among females, only beer drinking declined significantly. Thus, the drops in substance use since 1987-88 observed in the overall sample appeared to be primarily due to lower levels of use among males. The opposite movement was found among 9th graders: female use of barbiturates, beer, LSD, sedatives, spirits, tranquilizers, and other narcotics all declined significantly, whereas only mushroom and PCP use declined among males (Skager, Austin, and Frith 1991:66). Thus, declining use among female 9th graders accounted for the drop in use of other substances.

In a New England lower-grade survey (Grady, Gersick et al. 1986) females showed a lower use of marijuana in 6th and 7th grades, but not in 8th grade, as was the case with alcohol. Among 903 New York City high school students surveyed by Kleinman, Wish et al. (1988), females were less likely to be daily marijuana users (11% vs. 22%, p<.001). Selnow (1985*) reported that females were somewhat less likely than males to report higher scores on a general Substance Usage Index (SUI).

Reflecting gender convergence, among a sample of 1,004 Texas 8th and 10th graders, stepwise multiple regression analysis of the concurrent predictors of drug use revealed that grade and gender accounted for only 4% of the variance in use, whereas number of friends perceived to smoke marijuana, use forms of cocaine other than crack, and to take amphetamines accounted for 39% (Pruit, Kingery, et al. 1991). Among 446 Anglo and Hispanic youths (ages 9-17) in Ventura County, California, current AOD users and abstainers were similar in age and gender (Coombs, Paulson, and Richardson 1991). Similarly, in a longitudinal survey (1979-1984) of cocaine use among 1,308 New Jersey adolescents, who were age 12-18 at time of initial survey, data indicated no statistically significant gender differences for any grade level, although some differences were apparent, especially in notably lower prevalence rates for females than males in the older age groups (White 1988).

Gender differences in use of illicit drugs continue into young adulthood. In a longitudinal study of consequences of adolescent drug use on the psychosocial and health function of young adults in New York State (from age 15 or 16 to age 25), the proportion of females who had ever used illicit drugs other than marijuana and cocaine ten times or more was 15%, as compared with 28% among males (Kandel, Davies et al. 1986).

Summary

Adolescent female AOD use, depending on the substance, is increasing, or is decreasing at a slower rate than male AOD use, resulting in a narrowing of traditional gender differences. This narrowing of differences between female and male substance abuse statistics may, however, be misleading. Although national studies tend to support this picture, results have varied on this point across time when subgroup membership and location are controlled for (Milgram 1990:87). Attributing changes in national numbers to changes in behavior, therefore, may be hasty. Furthermore, there is evidence that the rate of convergence has stabilized.

Alcohol. Data from adolescent surveys indicates overall that there has been gender convergence in drinking prevalence since 1950s (Roman 1988:14). This convergence appears to reflect both increases in drinking among females and some stabilization or decline among males. However, in the 1980s national patterns appear to have stabilized, with females continuing to be less involved in alcohol consumption than their male contemporaries, especially in measures of heavy drinking. This has led Thompson and Wilsnack (1984:59) to conclude: "Apparently, public concern [over adolescent female drinking] has developed as a delayed reaction to earlier changes that are now relatively stabilized." Rates of heavy use among females appear to be at least half that of those for males.

Although more females than males abstain or drink moderately, and convergence has stabilized, this does not mean that concerns over female drinking are less warranted than over male drinking. The majority of high-school females drink, often regularly, and a sizeable minority engage in at least occasional heavy drinking. Rising rates of intoxication among young females may indicate "that the patterns or contexts of girls' drinking are changing in such a way that occasional episodes of extremely heavy drinking or intoxication could become typical and acceptable behavior among adolescent females as well as males" (Wilsnack 1986:10). As Thompson and Wilsnack (1984:40) have observed, "What deserves greater attention in future research is the possibility that occasional episodes of drunkenness or extremely heavy drinking, perhaps as a characteristic of parties or weekend recreation, could become a normal rather than deviate activity involving a majority rather than a minority of adolescent females." According to Milgram (1990:90), this is already true of college women, 25% of whom reported being intoxicated 4 or more times a month. That females may be more adversely affected by similar levels of drinking needs also to be further explored. Measures indicating experience with intoxication rather than simply quantity/frequency need to be added to surveys.

Tobacco. Smokeless tobacco, pipes, and cigars are seldom used by females, however, cigarette smoking among adolescent females has come to equal or exceed that of their male contemporaries. This is due, in part, to two trends: (1) a rapid increase in cigarette smoking among female adolescents throughout the 1960's and most of the 1970's; and (2) more recently, a notable decline among adolescent males, and a much slower rate of decline among adolescent females. Tobacco is one of only two substances (the other being amphetamines) used more often by females than by males and may indicate gender differentiated motivations for use. Possible female-male differences in correlates of use are discussed at a later point in this Update, but clearly the role of cigarette smoking among adolescent females, and the factors affecting it, warrant closer scrutiny. Heavy smoking females should be viewed as at-risk for involvement in other drugs.

Marijuana. The most popular illicit drug for both genders is marijuana, with similar overall prevalence rates. However, females are noticeably exceeded by males in measures of heavy or frequent use.

Other (Illicit) Drugs. In prevalence rates for total illicit drug use, few gender differences are apparent, with fewer differences evident in the most recent national household survey compared to the high school senior survey. However, this masks several important drug-specific variances. Adolescent female use of amphetamines and psychotherapeutics in general, including measures of heavy use, exceeds that of males. For all other substances, female adolescents are less involved in substance use and abuse than are males, especially at the heavy use levels. This is true of cocaine, hallucinogens, inhalants, opiates, and PCP.

Trends. Trend data generally suggest declining levels of use among adolescents. However, rates of decline vary by substance and by gender and by age. On the whole, there has been a gender convergence factor, but in many cases this convergence trend has involved declines in male use, as much as increases among females. Female and male use rates may approach parity for substances where male use rates traditionally exceeded female use rates, but later dropped more quickly for males than for females. Furthermore, the latest longitudinal studies suggest use rates among females have stabilized, even for cigarette smoking.

CORRELATES & RISK FACTORS

Researchers have directed far more attention to prevalence and patterns of use than to correlates and risk factors contributing to these gender differences and trends. Most current knowledge about correlates is focused on alcohol and tobacco, undoubtedly due to the relative popularity of these illicit drugs among adolescent females. Determining the extent to which these conclusions apply to other drugs remains a research need. But even in regard to alcohol and tobacco there are large gaps in our knowledge. As Clayton (1991:115) observes regarding tobacco research, "authors who review determinants of female smoking have much to say about associations that hold for females, but little to say about those that are specific to females." Similarly, Thompson and Wilsnack (1984:39) stress that research is excellent for estimating how many females are drinking, but is "less informative as one asks more specific questions about how females drink and what the consequences are."

In considering the factors associated with AOD use, research shows that many correlates have similar significance for females and males generally. However, in some cases, different correlates of use appear to exist for females apart from males; in other cases, females are affected differently than males by the *same* correlates of use. A review of this literature provides no clear or comprehensive picture, but rather scattered glimpses of different correlates associated with different AOD behaviors and attitudes. Taken together, however, the evidence provides support for the conclusion that AOD use among adolescent females is affected by different processes than AOD use among males. Also, some possible factors placing females at risk of AOD involvement can be identified, as can some protective factors which appear to ameliorate risk and help explain lower levels of use. Insight is provided into both why gender differences continue to exist and which factors may lead some adolescent females to engage in the heavier patterns of use more typically associated with males.

The main focus of this Update is what distinguishes adolescent female from male AOD use. However, the picture would be incomplete if we failed to emphasize that there are many important correlates of use which appear to have virtually equal significance for adolescent females and males in the same age breakdowns. The fact that such commonalities exist may explain why many studies have not found significant gender differences in examinations of particular etiological influences. For example, among the 1,911 students surveyed in 1983 by Pascale, Trucksis, and Sylvester (1985*:247), females and males gave the same top three reasons for drug use with virtually the same frequency. Curiosity was the most popular reason given (at a rate of 48% by females and 44% by males), followed by relaxation (34% and 35%), and recreation (32% and 36%). A community marijuana-use survey of 403 New York adolescents in the mid-1970s, Brook, Lukoff, and Whiteman (1977) found both genders similar in the patterns of relationships between personality and perceived environmental factors and marjiuana use. Nonconformity to conventional values and modeling of familial and peer drug use accounted in large part for adolescent drug behavior regardless of gender, age, or ethnicity. In regard to tobacco, Grube, Rokeach, and Getzlaf (1990) found no differences in the values adolescent females and males attributed to smokers, ex-smokers, and nonsmokers. Selnow (1985*) looked at correlates of religion, group membership, parental relations, and self-image and found similar significance for females and males. Johnson and Marcos (1988*) also found few gender differences in correlates of use.

In their valuable risk-factor research, Michael Newcomb, Peter Bentler and colleagues have consistently found little evidence of gender differences. Among 994 high school students in Los Angeles County, Newcomb, Maddahian, and Bentler (1986) found no significant gender differences in 10 risk factors associated with each of five substance use categories (alcohol, cannabis, cigarettes, hard drugs, and nonprescription medications). A test for whether gender (being male) itself might be a risk factor for AOD use using hierarchical multiple regression analyses indicated that gender did not notably increase the use variance accountable by the 10 risk factors. Similar lack of differences were reported for different samples by Newcomb, Maddahian et al. (1987*) and Newcomb and Bentler (1988).

However, the discovery of commonalities does not eliminate the need to look beyond those factors of similar significance for females and males. Although many correlates of AOD use are of equal or similar importance to males and females, these common factors do not explain the *variation between* female and male rates of substance use. If many of the same risk factors influence both males and females, there is still evidence that there are many factors that affect females differentially or to a different degree than males. Female adolescents appear to differ from males in three arenas. First, sometimes different correlates of use are associated with female AOD behavior. Second, females are at greater risk than are males for experiencing particular conditions correlated with both male and female AOD use. Third, sometimes particular factors leading to *nonuse* or lesser degrees of use are identified for female adolescents, but not for males.

In the remainder of this section, we will review several factors that have been identified in various studies as being relevant to understanding of female adolescent drug use. In some cases these are of special pertinence for female adolescents, while in other cases they are also significant for males but still need to be included in the profile of considerations for females. In still other cases, the factors may not be unique to females, but potential exposure or sensitivity to the factors may differ between genders. The following factors are discussed in alphabetical order as their significance for female adolescent AOD users varies by substance:

- Age,
- Appropriateness: Social Context, Norms, Expectations
- Coping, Stress, and Depression;
- Dating and Sociability;
- Decision making Factors;
- Educational Attachment and Attainment;
- Family Factors;
- Gender Role Norms and Expectations;
- Peer Pressure;
- Self-Concept and Self-Image;
- Sexual Behavior;
- Sexual/Physical Abuse; and
- Social Context.

Age of Initiation

One reason why females traditionally have reported lower levels of use of even the most popular drugs is that they generally have initiated use later than males (Beck and Summons 1987*). Thompson and Wilsnack (1984) identified later age of drinking onset among females as one of the factors that protected them against abusive drinking. However, if adolescent male and female drinking patterns have converged and if drinking-related problems are becoming more evident among adolescent females than in previous (as earlier suggested), relatively recent drops in female initiation ages may be a reason. According to a 1980 report by the U.S. Department of Health and Human Services, between 1900 and 1960, females smoking initiation age steadily dropped until it approached (as it remains) approximately equal to the mean male age of smoking initiation. This is true of alcohol and other drugs as well, in which no significant difference is found between female and male ages of initial use. This may explain the relatively recent increase in substance-related problems among female adolescents, as adolescent AOD research has consistently shown that the earlier the onset of use, the greater the subsequent use problems (Austin 1988:5).

Of further significance is the possibility that the relationship between early initiation and later problems is stronger for the female. When the female adolescent begins AOD use at a younger age than typical for eventual users, added to the age-problem relationship is the non-normative aspect of her behavior. Acting outside the norm has also been shown to carry particular risks for females, as discussed further below. Data on sexual initiation among alcohol and marijuana users consistently show that young women who use substances at earlier ages may be following less normative behavior paths than their male counterparts, and thus are more likely to engage in the full spectrum of non-normative activities (Mott and Haurin 1988*).

Social context can either promote or mitigate against substance use, relative to what seems appropriate under the circumstances. Harford and Grant (1987*) found the strongest influence on drinking among both females and males was perceived normative support for drinking, accounting for 58% and 55% of the variance in drinking context items, respectively. However, this may be particularly pertinent for adolescent females who, unless they are heavy AOD users, tend to be more sensitive to perceptions of what others will judge to be appropriate behavior than are males. Not only are females generally more sensitive to judgements of appropriateness, but females are less often exposed to substance-appropriate contexts than are males, in part because fewer situations are perceived as appropriate for female substance use.

Alcohol may especially be a case in point. Graham, Marks, and Hansen (1991) found that among the 526 Los Angeles 7th graders participating in the Adolescent Alcohol Prevention Trial (Project AAPT), future substance use for females, but not for males, was affected by how many times they had been offered a drink in the past month. The number of times a drink is offered may indicate either the number of exposures to a drinking-appropriate context, or the process whereby a given context or set of contexts comes to be judged as appropriate. In the first case, the females offered drinks more often may simply be in an appropriate context more often. In the second case, appropriateness of drinking may be gauged by how often alcohol is offered; the more the question is raised, the more normative or acceptable the behavior may seem to an adolescent female. Finally, males may take the more active role in seeking alcohol, while females may wait until they are offered drinks, typically by a date, in order to verify the appropriateness of participating. The fact that males are more likely to get their own drinks could explain why males had many fewer alcohol offers than females. However, Graham, Marks and Hansen (1991:295) warn that the gender correlation differences may be nonsignificant precisely because males had fewer drink offers than females: "Thus, it could be argued that if the males had as many offers as females, offers would be as predictive for males as for females. On the other hand, if there were prevailing sex differences affecting the number of offers received, offers might always be a relatively unimportant predictor of boys' future substance use behavior."

Such context considerations are important in light of the fact that alcohol remains the adolescent female drug of choice, even though females maintain lower consumption rates than do males. In fact, Ferrence (1985) suggests one reason females may be more involved with alcohol, amphetamines, and tobacco than with other (illicit) drugs may be the relative frequency of appropriate social context for substance use. That is, the situations in which they would be used are more frequent, compared with other drugs. For example, adolescent females tend to spend more time in female company than in male company, and "the nonmedical use of prescription drugs is more likely to be carried on by women in groups of the same gender than is the use of illicit drugs" (Ferrence 1985:446). The same is true of tobacco, the only other substance frequently identified as used by more female adolescents than males. Not only are females companions in smoking, but they initiate one another into smoking (Ray and Braude 1986).

The context is different for illicit substances. As is the case with alcohol, females are most likely to be introduced to drugs by males, rather than females, and especially in dating situations, "whereas men use these drugs in a wider variety of contexts" (Ferrence 1985:446, citing Bowker 1977). This is further supported by the fact that males, whose use of illicit drugs outpaces use by females, first use drugs in the company of other males. For male adolescents, same gender social situations are also more frequent than mixed gender social situations.

In addition, in an analysis of national data on drug use among school dropouts, Mensch and Kandel (1988:107) discovered that both prior cigarette smoking and age of initiation of it were more important predictors of dropout status for women than for men, which suggested to them "that involvement with cigarettes has greater social implications for teenage girls than for teenage boys."

Further, double standards concerning appropriate behavior for females and males still exist and can inform attitudes about the relative seriousness of drug use among female versus male adolescents. Some studies attribute the lower level of AOD use by adolescent females in comparison with males to such social conditioning and social attitudes regarding appropriate gender role behavior. Gomberg (1986:91-92) hypothesizes that "women tend more frequently to use substances in medicinal, therapeutic ways than do men, and they tend to do this because of patterns of social approval and disapproval." Thus, they gravitate toward more legal, socially acceptable substances and are not as heavy users as males.

Rejection of traditional feminine values may not distinguish between drinkers and nondrinkers so much as consumption levels and drinking problems among females who drink alcoholic beverages. Heavy use of licit or illicit drug is more disapproved by society for women than men, as noted by Fillmore (1984). For example, Harford and Spiegler (1982) examined adolescent drinking contexts in data from 3,830 students the 1978 national adolescent drinking survey. Among males, there were slightly higher proportions of times drunk for those who drink at parties when adults are present than for those who drink when adults are absent. Among females, the proportion of times drunk was slightly higher among females who do not drink when adults are present. The authors speculate that "this finding may reflect greater adult acceptance of drinking and drunkenness among males than among females" (p. 177). Thompson and Wilsnack (1984) observe that evidence still exists that traditional gender role orientation and gender-specific drinking norms on the inappropriateness of women to drink or drink heavily moderate drinking among female adolescents (citing Wilsnack and Wilsnack 1978).

Even more than with alcohol consumption, the lower rates of illicit drug use among females may, therefore, relate to lower levels of acceptance, further narrowing identifiably appropriate contexts. This lesser rate of acceptance may be internalized by the female adolescent, inhibiting use. Ferrence (1985:444-445) stresses that much of the gender differences can be attributed to social norms that encourage or discourage drug use: "Since these norms reflect social expectations about deviance generally, it is not surprising that sex ratios for use are highest for those substances that are considered to be most deviant at the time."

Traditional female gender roles may also play a role in moderating heavy use over time. Research supports this hypothesis for alcohol consumption. For example, the relatively greater decline in heavier drinking observed by Grant, Harford, and Girgson (1988*) among adolescent females as they mature into young women, compared to males, is consistent with the findings of Donovan, Jessor, and Jessor (1983) indicating that drinking during adolescence appears to constitute a greater risk for later problem drinking in young men than it does in young women. Grant and colleagues hypothesized that growth into adulthood involves the assumption by young women of roles and life situations that place greater constraints on their continuing use of alcohol than do roles adopted by younger men at the same age.

Further, some traditional male role behaviors are relatively rare among traditionally socialized females. "Machismo" is an example of such male-specific gender role behavior. In a survey given in a large midwestern suburban high school of 2,000 white students, male high school athletes tended to use and abuse alcohol more frequently than their nonathlete counterparts, but there appeared to be no difference in the frequency of alcohol use or abuse between female athletes and nonathletes. The results support other research (e.g., Heyman 1986) indicating that the "macho" image assumed by many male athletes is associated with frequent and hard drinking, but that this association does not exist for females (Carr, Kennedy, and Dimick 1990).

It may well be that the strength of the normative influence for female adolescents is such that more than males heavy participation in AOD use denotes a generally antisocial stance. Indeed, Thompson and Wilsnack (1984:54) observed that, although antisocial behavior is more common among males than females, the association between drinking (at least frequency of drunkenness) and antisocial activities "is at least as strong for females as it is for males." In further support of the antisocial strain in females involved in heavy AOD use, Harford and Grant (1987*) found that for females, unlike males, both personal instigation and relaxation of personal controls (low religiosity) influence the selective entrée into peer drinking context.

There is evidence that delinquency *per se* is less strong a predictor for later involvement in substance abuse for females than males, except for those females involved in more serious offenses. Analyzing data from the National Longitudinal Youth Survey, Windle (1990) found that, among females, late adolescent substance use was more highly associated with the commission of property offenses in early adolescence than with less severe offenses in other categories such as status offenses or transgressions against persons. The higher severity of property offenses reflects higher levels of deviance, and again indicates females involved in heavy substance abuse are a population at high risk of multiple problem behaviors.

However, although pertinent in adolescent substance use, Windle (1990) speculates that early-adolescent delinquent behavior may not be an equally potent predictor of adolescent (or adult) substance use for women and men. Rather, for women, it is conceivable that internalizing symptomatology (e.g., depression) rather than externalizing symptomatology (e.g., delinquency) may be more predictive of substance use and abuse (Ensminger, Brown, and Kellam 1982; Windle and Barnes 1988) as discussed below.

It may well be that, in accordance with social control theory, strong social bonds among adolescent females serve as a protective factor. Taub and Skinner (1990*) examined the impact of the social bond on amphetamine use among a sample of 1,624 adolescent females who participated in the 1984 National

High School Senior survey. A model was tested that the difference in predictive power of social bond variables may be due to the omission of intervening variables between the bond and serious drug use, such as prior experience with the minor drugs cigarettes, alcohol, and marijuana. Generally, first use of cigarettes, alcohol, and marijuana preceded or did not follow first use of amphetamines. The majority of the bonding variables had low to moderate positive correlations with other elements of the bond. Correlations between the bonding and drug use variables were negative but low. And of the drugs, amphetamines had the weakest relationship with the bonding variables. Bonding theory itself was better able to explain cigarette, alcohol, and marijuana use than amphetamine use. Combining drug progression with social bonding theory substantially increased the explained various of amphetamines.

Interestingly, among the bonding variables, religious commitment had the only significant direct effect on amphetamines. Religion inhibited or prevented drug use at all levels, although with lessened significance for amphetamines, suggesting that this was a powerful agent of social control for females. On the other hand, when this model was tested on a sample of males form the same data set, religion did not have a significant direct effect on amphetamine use. This suggests that contrary data regarding the effect of religion on adolescent AOD use may be due to gender effect and the predominance of males in the surveys.

Coping, Stress, & Depression

Research indicates connections between the use of alcohol and adolescent female feelings of stress and depression, but this relationship is unexplored for other drugs. Research has also linked adolescent alcohol use with significant life events or crises. In such instances, alcohol functions as a coping mechanism. This pattern appears to begin early in life.

For example, in their study of 425 seventh graders, Baer, Garmezy, and McLaughlin (1987) found that alcohol use increased along with increases in life events, daily hassles, and family conflict. The correlation was particularly strong for females. Adolescent female use of alcohol in relation to life events may explain why correlations are found between consumption and the psychological effects of menstruation (Glynn, Pearson, and Sayers 1983; and Lee 1978). Beschner and Treasure (as cited in Glynn, Pearson and Sayers, 1983: 20) see alcohol use as a coping strategy because "physical changes at the onset of menstruation, as well as contradictory signals about sexuality, tend to create confusion, guilt and rebellion in many females." Windle and Barnes (1988*) found adolescent females to be more likely than males to have lower self-esteem and use alcohol to cope in times of stress. There was a positive relationship between escapist reasons for drinking and times drunk for female adolescents, but not for males. Intercorrelational analyses showed that only for females were escapist reasons for drinking significantly associated with an increase in the number of times drunk, lower GPAs, lower self-esteem, and a less positive rating of physical appearance. Cigarette smoking among adolescent females has also been related strongly to stress, especially over school performance (Hynes 1989).

Another psychological escapism and stress factor which appears particularly related to AOD use among adolescent females is depression. Alcoholism is more frequently associated with negative affect in adolescent and adult females than in males (Sandmaier 1980; Windle and Barnes 1988*). Deykin, Levy, and Wells (1987) found that adolescent female alcohol abusers are more than six times as likely to have experienced a major depressive disorder than other adolescent females. For males, the correlation was only half as significant, with the alcohol abuse group three times as likely to have had a major depressive disorder than other males. This association between AOD use and depression may partly explain why Kinkel, Bailey, and Josef (1989) found that females who were frequent alcohol users and heavy users of marijuana were more prone to a suicide attempt than their male counterparts.

Similar findings are revealed in the literature on adult women. For example, Windle and Barnes (1988*) observe their adolescent gender differences to be consistent with previous research on the alcoholism-negative affect relationship among adult women and suggest that findings may be due to differential socializing practices. Escapist, tension-reducing reasons for drinking in adolescence may, therefore, be consistent with a stereotyped female response to stress. This suggests a continuity between adolescent and adult female reasons for AOD involvement. Thus a review of this literature on women may shed light on the process among adolescents.

Sandmaier (1980:102) observes that women are far more likely than men to begin problem drinking following a specific traumatic event, particularly those events associated with the feminine role, and without any history of alcohol abuse. She attributes this pattern to the heavier stigmatization of alcohol abuse among women than men, making it likely that women need a major crisis to propel them toward it. Ron Roizen offers a similar but somewhat different perspective: "Since heavy drinking (and thus the development of alcoholism as well) may be a part of the masculine role for some men, men may develop alcoholism as a matter of course and without specific circumstances or events to prompt it. Women on the other hand are not expected to be heavy drinkers as a matter of course, and thus will develop alcoholism more often in specific life events or circumstances...because such drinking in women more pointedly demands an account or explanation" (quoted Morrissey 1986:206).

Whether this pattern also applies to adolescents warrants further investigation. As does the general question of why females turn to alcohol (and possibly other drugs) to cope with stress and depression more than males. Making the call for additional research particularly urgent is the fact that all the evidence is not consistent. In a study by Brannock, Schandler, and Oncley (1990) of 194 African American, Latino, and white students from two high schools and one college, males reported more overall drinking as a reaction to stress than did females. These effects were attributed to the social acceptability of male drinking as part of stereotypical "masculine" behavior. Thompson (1989*:43) also suggested that males are more likely than females to use alcohol as a way to escape psychological distress, and Morrissey (1986:247) argues that using alcohol to cope with tension is a pattern far more characteristics of men than women. Perhaps it can be argued that adolescent females heavily involved in alcohol may resemble the characteristics of male drinkers more than those of female drinkers involved as at lower level of use.

The factors which cause the most stress-related AOD use may also vary by gender. In a random survey of 1,684 students in grades 7-12, Mitic, McGuire, and Neumann (1987) found that stress related to problem drinking among both males and females, but stress factors differed. Consistent with research on other correlates, for females stress-related use was most associated with parents, money, and appearance, at roughly the same level of importance. In grade 9, a significant transitional period, females exhibited the strongest relationship between perceived stress and problem drinking

Dating/Sociability

Sociability factors appear to play an important role among both females and males, especially in regard to alcohol. In research on 654 teenagers, Newcomb and Bentler (1988b:73) determined "three positive effects of teenage alcohol consumption: enhanced positive self-feelings, and improved social relationships with family and romantic attachments." They speculated that self-feelings may be improved as "alcohol is noted for its ability to reduce social inhibitions and may have allowed certain awkward adolescents the opportunity to develop adequate social skills, thus improving their functioning in relationships and resulting in decreased self-derogation."

Sociability concerns, especially as they relate to dating, would appear to be especially an important factor among females. Blume's (1986) study of college females cites shyness and an enhanced ability to get along on dates as motives for drinking. This may be particularly pertinent for adolescents, as younger females are less experienced in dating than their college-age counterparts and could be expected to feel similar shyness and dating awkwardness. Milgram (1990:85-86) found that college-age females claim to drink to "enhance social interaction," and that adolescent females gave the same reasons for drinking as female adults do, that is "to relax, be social, have a good time." Unfortunately, the relationship between adolescent AOD use and dating remains virtually unexplored. Given the evidence that most adolescent females are introduced to AOD use by males, this is an area certainly warranting further research.

Decision-making Factors

Female adolescents may be less involved with alcohol and other drugs because they make decisions about AOD use somewhat differently than do males. Adolescent females appear more aware of, or are more likely to weigh, the risks of substance use, and they develop stronger reasoning abilities about drug use, earlier. They also may consider more sources of information about substance use than do males.

Adolescents in general have increasingly perceived substance use as potentially harmful, or as carrying risks. This is particularly the case for marijuana. Between 1977 and 1983, marijuana use among both male and female adolescents declined steadily, while the proportion of females and males who perceived marijuana use to be potentially harmful increased by 35%. However, for most substances, females as a whole continue to report greater concerns about the adverse social and health consequences of use. For example, Beck and Summons (1987*) report that females perceive greater risks associated with drinking in general and in being caught by police or causing an accident while drinking and driving. In contrast, males showed greater belief in their own abilities to control risk and avoid adverse consequences. This, the authors conclude, accounts for lower levels of drinking and driving among adolescent females than males. Although, Sarvela, Pape et al. (1990) found no significant gender differences in DWI behavior, Farrow and Brissing (1990) also observed more critical attitudes toward drinking and driving behavior (more conservative and responsible) in their female adolescents, which they relate, in part, to greater appreciation of risks and to perceived social role.

Similarly, Brownson, DiLorenzo et al. (1990) attribute the negligible use of smokeless tobacco among 12th-grade females (who smoked more cigarettes than their male counterparts) to differential attitudes toward safety. Among both genders, those who did not use smokeless tobacco reported that using smokeless tobacco was more dangerous than smoking cigarettes. Here again, drug-specific gender norms may play a role. Brownson and colleagues believe that adolescent males who use smokeless tobacco are less convinced of the danger because of the extensive association between smokeless tobacco use and sports heroes.

Newcomb, Fahy, and Skager (1990*) explored reasons for avoiding AOD drug use among 7th-, 9th-, and 11th-grade students in Ventura County, California, among whom use was significantly lower among females than males. Significantly more females than males also endorsed all five avoidance reasons examined (addiction, punishment, loss of friends, disappointment of parents, and disappointment of self) and indicated greater belief in the harmfulness of alcohol and marijuana. Further, when correlated with actual drug use, belief in marijuana harmfulness was more strongly negatively correlated with actual drug use across all six drug categories for females than for males.

Significantly, Pascale, Trucksis, and Sylvester (1985*) found females to be more aware of health risks involved in AOD use for all substances *except* cigarettes and amphetamines, two drugs for which female adolescents are especially at risk. Furthermore, increased perceptions of harmfulness were associated with decreased use levels. The relationship between perceived risk and use held across 13 categories of drugs. The differential substance use pattern between genders was mirrored in the pattern of perceived risk. The one exception to this pattern was for amphetamines, where slightly more females than males perceived amphetamines to be harmful, yet significantly more females than males used amphetamines. Here the motivation is important to discover, as it outweighs what appears to be a strong deterrent in all other cases. In the case of amphetamines, the weight control benefits associated with them may outweigh the awareness of their dangers. In regard to smoking, females considered cigarettes less harmful than did males and consequently smoked more than males. Here to a weight loss motivation adds to willingness to smoke for females. Such research indicates a need for further study of how actual drug use is related to belief in reasons for avoiding drugs and how providing youth with information about, and support of these reasons may help use decrease use.

Related to this, a higher proportion of female adolescents than males appear better at reasoning through drug-related situations. An assessment of the level of moral development used by 54 adolescents in reasoning about abstract social dilemmas and drug-related dilemmas showed females to reason at higher stages of moral development on drug-related dilemmas than males (Mohr 1987). This may indicate that adolescent females, more often than males, look beyond the immediate to the "big picture," including possible consequences and long-range effects, in AOD use decisions. It would be interesting to know if membership in the high-level reasoning group overlapped membership in the risk awareness group.

Underlying this greater risk perception maybe differences in the nature of self-education concerning substance use. Beck and Summons (1987*) asked 2,720 adolescents, grades 9-11, to identify sources they would use for information on alcohol, and to name their best source. Males and females differed somewhat on the former and significantly on the latter. Although both females and males reported turning first to their families, females were slightly more likely to turn to friends first. Adolescent females chose newspaper articles, TV programs, and movies as their best sources of information, whereas adolescent males indicated their own experience to be the best source of information on alcohol and other drugs. This may indicate that females may be less involved with alcohol and other drugs, in part, because they are more willing to listen to outside opinion, to consider information which might have a deterrent impact, and to see beyond their own limited experiences.

Educational Attachment & Attainment

Ensminger, Brown, and Kellam (1982) found the strength of attachment to school to be negatively correlated with substance abuse, particularly for marijuana use. For both females and males, the odds of being a heavy marijuana user were four times as great for an adolescent with weak bonds to school as for those with strong bonds. Though to a less dramatic degree, school bonds were also negatively correlated with both female and male use of most other drugs, though the strength of the correlation varied with substance and gender. Females differed from males on alcohol and cigarette use correlations, where the predictive value of weak school bonds remained significant for males, but was not as significant for females.

In the Johnson and Marcos (1988) survey of adolescents in Utah and Arizona, the only gender differences other than parental attachment involved educational attachment, but in inconsistent ways. Poor school ties were more predictive of female amphetamine use in both states, and female marijuana use in Utah.

Related to strength of educational attachment is educational attainment, both in terms of achievement and in terms of matriculation. Evidence suggests that relative unconcern for achievement, as well as a willingness to drop out, are correlated with AOD use, to some extent. Harford and Grant (1987*) found that high values on independence and a low value for academic achievement were related to peer drinking context for females and not males. They suggest that an independence-achievement disjunction may lead to the repudiation of academic achievement as a goal in favor of more accessible goal of peer group recognition for drinking. Further, if dropping out is considered to be the ultimate manifestation of weak school bonds, studies on drug involvement and the failure to complete high school support the correlations between weak school bonds and greater AOD use (Mensch and Kandel 1988; Austin, in press). If Ensminger and colleagues are correct in their findings that females are more strongly bonded to school than are males, this puts them less at risk for those AOD use behaviors correlated with weak school bonds than are their male counterparts. However, significant numbers of female adolescents are included in those with weak attachments to school and among those who drop out. It is therefore important to consider that one predictor of the potential dropout is parental education. The more school completed by parents, the less adolescents are likely to drop out. Further, same-gender role-modeling appears to be significant. Mensch and Kandel (1988) determined that maternal educational attainment was only a significant predictor of dropping out for females. It did not predict drop out rates for males.

Family Factors

Family bonds, family composition and management, parental attitudes, and parental drug use all play a part in adolescent AOD use. Different factors affect females and males differently, but the evidence is murky.

Family Bonds and Management. For both adolescent females and males, strong family bonds are associated with lower use levels of particular substances. However, both the typical strength of family bonds, and the substances for which family bonds predict use levels, may differ by gender. Ensminger, Brown, and Kellan (1982) report that although males generally have stronger family bonds than females do, associations between males' family bonds and substance abuse are only evident for alcohol. For females, however, stronger family bonds are associated with less heavy use of all substances, except cigarettes which show very little variation by level of family bonding. For example, in female marijuana use, the odds ratio is more than two. Further, Johnson and Marcos (1988) found parental attachment was especially relevant in females for alcohol use, but the differences were too slight to suggest more than a call for further investigation between gender and parental attachment.

This is a disturbing situation in that, for this particular correlate of use, females are more likely than not to be in the at-risk group, given their relatively weak family bonds. Illustrative of this, Farrow and Brissing (1990) found that the females in their sample of 10th-graders who were heavier users of alcohol, tobacco, and other drugs also reported poorer relationships with parents and greater parents' dislike of friends. The authors hypothesize that higher AOD use by adolescent females is in response to social pressure to conform and an effort to "self-medicate" the effects of family dysfunction. In general, the gender-based role of family management and environment on later AOD use needs further exploration. In their study of early family environment and later drug use, Block, Block, and Keyes (1988) found that unstructured, laissez faire home environments exerting little pressure to achieve predicted adolescent drug use for females, but not males.

Family Composition. Family composition (e.g., traditional single marriage households, divorced households, and households involving remarriage) may also exert some gender influence on adolescent AOD use. Female adolescents not only tend to have weak family bonds, they also appear to benefit less from the traditional family structure than do adolescent males. This can be seen in the differences between male and female AOD use patterns relative to parent divorce and remarriage situations. Relatively weak family bonds result in adolescent females experiencing less trauma over parental divorce than their male counterparts. Needle, Su, and Doherty (1990) documented this in a longitudinal study revealing consequent negative effects on males but not females. Greater overall substance use was found among adolescents of both genders following divorce, but remarriage of the custodial parent affected females differently than males: it *decreased* substance use for males, but *increased* substance use for females.

For adolescent males, the relationship between two-parent home and lessened substance use may be one involving amount of adult supervision, or the number of nights an adolescent spends out, rather than the weakening and consequent restrengthening of family bonds during parental divorce and remarriage conditions. Alternatively, it could also indicate the male's greater emotional need of a traditional family structure. Although the pattern of increased use for female adolescents under conditions of parental divorce parallels that of males, the divergence in pattern between male and female adolescents following remarriage of custodial parents indicates a need to examine different hypotheses for females.

Possibly such home environment variables are at work in the living situation provided to adolescents under conditions of parental divorce and remarriage; possibly such conditions are as significant for adolescents as for children. There is a clear need for research examining this condition, and perhaps also for research into factors such as parental divorce and remarriage effects on adolescent self-esteem, or remarriages involving physical or sexual abuse by the stepfather as opposed to those in which such a dynamic is absent. Also, as female use increases in the divorce condition and further increases in the remarriage condition, the actual correlate may be discomfort with change. In keeping with the established relationship between family bonds and substance use, it could be hypothesized that parental divorce weakens family bonds felt by the adolescent female, and that consequent remarriage *further* weakens those bonds, in as yet unknown ways.

Parental Attitude. Understanding the relationship of family dynamics to drug use is complicated by the fact that, despite tendencies to have relatively weak family bonds, adolescent females seem to be more influenced by parental attitudes for a longer period of time than are males. This may help explain the later age of initiation for females. Some research (e.g., Biddle, Bank and Marlin 1980; Margulies, Kessler, and Kandel 1977) has found that parental attitudes about alcohol (as with drinking behavior) affect daughter's drinking more than son's, but here the evidence is more inconsistent (Thompson and Wilsnack 1984:48). Newcomb, Fahy, and Skager (1990*) found significantly more females than males reported concerns over disappointing parents (as did 7th graders compared to 11th), although this was not significantly correlated with actual use. In fact disappointing parents revealed one significant gender difference: adolescent male cocaine use was more negatively correlated with disappointing parents than was female cocaine use.

Parental Use. Moving beyond parental attitudes and fear of parental disappointment, is the role model effect. Though modeling parental attitudes opposed to drug use appears to have some deterrent effect, modeling support of drug use seems to have slightly greater impact on adolescents. Both genders are influenced by parental AOD use. Newcomb and Bentler (1988) found no gender difference associated with influence on adolescent AOD use for either maternal drug use or family disruption. However, there is some evidence to suggest that adolescent females are more affected by it than males: several studies have shown parental drinking to influence drinking behavior of adolescent daughters more than sons (Thompson and Wilsnack 1984:47). Some evidence also indicates that parental smoking predicts smoking more among females than males (Clayton 1991:117). This is a significant problem for girls given that parents have been shown to be present in 7% of their first smoking incident experiences (Friedman, Lichtenstein, and Biglan 1985). Half of the adolescents surveyed by Tuakli, Smith, and Heaton (1990) reported smoking most at home; 17% cited smoking parents or relatives as reasons for starting, and 18% as reasons for continuing smoking. Unfortunately, gender breakdowns were not provided.

More specifically, there is some evidence that girls are most affected by maternal use. The relationship between mother's use of tobacco and adolescent daughter's use of tobacco has been well established. Females are more influenced by maternal smoking than males (Clayton 1991:117). In a study of 143 adolescent females, Hover and Gaffney (1988) found that a higher percentage of smokers had mothers and friends who smoked than nonsmokers. Hynes (1989) reports that in families in which both parents smoke, 21% of girls are smokers, compared with 8% in famlies where neither parent smokes. There is also some evidence that heavy drinking by females is related specifically to drinking by their mothers (Thompson and Wilsnack 1984:47). Forney, Forney, and Ripley (1988*) reported that female students, minority students, and respondents younger than 12 years or between 12 and 13 years seemed to be more profoundly affected by the mother's heavy drinking than were male students, white students, and students in the older age groups. This would indicate that the function of role modeling along with feelings of acceptability or appropriateness are key. The behaviors influenced by parents may also vary. Parental smoking seems to influence females to start smoking, whereas it primarily influences males who are already smoking to more quickly adopt higher levels of smoking (Clayton 1991:117).

This association for the legal drugs alcohol and tobacco lends credence to the possibility of such a relationship for other drugs. Fisher, MacKinnon et al. (1987: 81) found for 106 UCLA undergraduates that parental cocaine and hallucinogens use was significantly associated with daughter's use but not son's use. Although researchers still need to determine whether this relationship holds true for younger females, it is significant that *exposure* to parental use of drugs most probably occurs prior to adulthood and, therefore, must be treated as an adolescent correlate, even if the effects are latent.

Thompson and Wilsnack (1984:47) suggest that the relatively greater influence of parental drinking on females may be related to males having more peer models of drinking and drug use behavior at younger ages. In addition to the role-model effect, parental AOD use affects family management and may well be accompanied by relatively low levels of supervisory and achievement-oriented family interaction. The research of Block, Block, and Keyes (1988) suggests that such circumstances have greater impact on females than on males.

Specifically studying children of substance abusers, Gross and McCaul (1990-1991*) found significant gender differences. There was virtually no difference between boys who came from families with a positive history of substance abuse and boys who did not. Being a girl from a family with a positive history conferred a greater risk of receiving a score within the clinical range for total number of problems on the Child Behavior Checklist indicating pathologically high levels of symptoms on a broad range of psychological distress and/or behavioral disturbances.

Peer Pressure

School, family, and peers have long been treated as *the* significant triumvirate in adolescent behavior, including AOD use. Peer influences have consistently been shown to be the strongest factor leading to AOD use among adolescents, and many studies have detected no gender differences in their influences. However, there is some evidence that females have weaker bonds to peers than do males and that peer relationships or bonds *per se* are less predictive of substance use for adolescent females.

Some findings seem to suggest that females are more resistant to peer pressure than are males. Windle and Barnes (1988*) found female adolescents less likely to report social pressure as a reason to drink than their male counterparts. Mirroring this, the best friends of males consumed more alcohol than best friends of females, although the alcohol consumption rates among female adolescents and their best friends were of such high magnitude that they virtually mirrored the drinking behavior of one another. Thompson's (1989*) analysis of earlier national survey data revealed that peer attitudes had less effect on alcohol consumption among adolescent females than among males. This may also explain why Carr, Kennedy, and Dimick (1990*) found no significant differences in alcohol consumption between high school female athletes and nonathletes, but found significant correlations between alcohol consumption and organized athletic activity for high school males. The fact that more male athletes than nonathletes drink may involve peer pressure and social pressure to drink, pressures which females, even in organized peer groups, are either less exposed to or less vulnerable to. Similarly, lack of vulnerability to peer pressure may explain DeJong's 1987 findings that successes for males were not replicated for females in the impact of Project DARE (Drug Abuse Resistance Education). As the goal of Project DARE is the enhancement of skills for resisting peer pressure to experiment with alcohol and other drugs, success would be limited to nonexistent where peer pressure is not an issue.

On the other hand, research also supports contradictory findings. Beck and Summons (1987*) report the influence of friends was important for females and males alike. Similarly, Forney, Forney, and Ripley (1988*) found the relationship between drinking habits of students and friends was equally strong across genders, with students perceiving their best friend to have the same drinking behavior as their own. More recently, Coombs, Paulson, and Richardson (1991) reported no significant gender differences in a study of the relative influence of peers and parents on AOD use among 446 Anglo and Hispanic youths (ages 9-17) in Ventura County, California. In a more detailed study of social influences, Graham, Marks, and Hansen (1991) reported evidence that among 526 Los Angeles 7th graders participating in the Adolescent Alcohol Prevention Trial (Project AAPT), three distinct social influence processes contributed to adolescent alcohol and cigarettes use: active pressure involving explicit offers to try alcohol, passive pressure involving social modeling, and overestimation of peer use of a substance. No significant gender differences were detected, nor differences in regard to substance consumed, prior use experience, and age. This strengthened the generalizability of the social influence frame work.

As can be seen, conclusions about female adolescent vulnerability to peer pressure are problematic. Enough evidence exists, however, to warrant further exploration of possible gender differences.

Self-Concept & Self-Image

The correlation between adolescent self-concept, self-image, and AOD use has long been debated due to conflicting research findings (Butler 1982; Pandina and Schuele 1983; Selnow 1985*; Svobodny 1982). It may be that, at least partially, the inconsistent research findings reflect differences in the significance of this correlate for females and males. Adolescent development literature attributes generally poorer self-concept to adolescent females than to males. This may indicate that although adolescence often constitutes a struggle to form a positive self-concept, the stakes are higher for females. Those adolescent females with poor self-concept may turn to alcohol and other drugs as coping mechanisms.

Social ease, overall confidence, self-esteem, ego resiliency, academic ability, and personal appearance constitute some areas contributing to adolescent female self-concepts. If negative self-concept is a significant risk factor for female adolescent AOD use, reflections of the correlation should be found for these contributing factors. Indeed, such is often the case. However, as self-concept and self-image involve numerous different elements, these factors have been approached, defined, and subsequently measured differently by different researchers. This may account for conflicting findings, particularly in relation to female adolescent smoking behavior. For example, Hover and Gafney (1988) found lower social skills and lower academic achievement among female smokers than nonsmokers. This may be related to Hynes (1989) observation that smoking among girls is strongly related to stress over school performance. On the other hand, Clayton (1991) found support for the hypothesis that female smoking is associated with self-confidence, social experience, and rebellion, whereas male smoking is associated with social insecurity. Findings for other substances, however, are more consistent and tend to support the relationship between poor self-concept and self-image elements and likelihood for AOD use among adolescent females.

Tortu and colleagues (1988) found that for 1,465 seventh graders, self esteem, problem-solving confidence and academic esteem are negatively correlated with the use of tobacco, alcohol and marijuana for females, but not for males. Thus, among adolescents experiencing low levels of self-esteem and a poor self-concept, females are at greater risk of using tobacco, alcohol, and marijuana. In a longitudinal study, Block, Block, and Keyes (1988) replicated this for other substances, finding that drug use reflected an absence of ego resiliency. Neubauer (1989) identified self-concept as a significant predictor of AOD use among adolescent females.

Concerns or insecurity over physical appearance may be relevant to both self-concept and risk of AOD use, especially of tobacco and amphetamines. One study of 1,297 teens, found that "females who saw themselves as unattractive were four times more likely to use cocaine, marijuana, hallucinogens or amphetamines than those who believed they were average-looking or attractive" (cited in Friend 1991). Adolescent females of average weight were in the lowest risk group, with overweight females more likely to use drugs. The overweight females were not in the highest use category, perhaps due to coping through food as well as drugs. The highest risk group consisted of underweight teenage females who ranked themselves as unattractive; they were 6 to 10 times more likely to use drugs than their average-weight, average-looking or attractive contemporaries.

The linkage of self-esteem to physical appearance has special relevance for tobacco and amphetamine use where self-image and appearance are assessed by a girl's weight. There is evidence indicating weight control constitutes an important factor in initiating and continuing smoking (Clayton 1991:119). The cultural value on slimness appears to heighten the appeal of cigarettes for females who, throughout adolescence, are more likely than males to believe that "smoking cigarettes keeps your weight down" (Charlton 1984). Hynes (1989) argues girls smoke in part as a means to avoid other behaviors which are considered even worse, such as overeating. This association increases with smoking frequency, that is, the heavier the smoker, the more likely weight control is to be cited as a positive benefit of smoking. The high use of amphetamines would also appear related to their use to control weight and to the social acceptance of diet pills (Clayont, Voss et al. 1986; Taub and Skinner 1990*). Johnston, Bachman, and O'Malley (1989:80) believe that the frequent use of amphetamines for the purpose of weight loss is responsible for the fact that since 1982 females have shown slightly higher or equivalent rates of stimulant use.

These findings may explain why Pascale, Trucksis, and Sylvester (1985*) found females to be more aware of health risks involved in AOD use for all substances *except* cigarettes and amphetamines. The excessive emphasis on slimness as an indication of fitness may lead adolescent females to believe that the positive value of avoiding the health risks associated with obesity mediates the negative value of other health-related issues around smoking and amphetamine use.

Sexual Behavior

Numerous studies have found there to be positive correlations between adolescent involvement with drugs, sexual experimentation, and precocious sexual activity (Mott and Haurin 1988*; Newcomb and Bentler 1988a; Zabin, Hardy et al. 1986; Yamaguchi and Kandel 1987; for a review, see Gilchrist, Gillmore, and Lohr 1990). This is important both in terms of the role drugs play in subsequent decisions about sexual activity and contraception, and in terms of the outcomes of such decisions.

First, it is important to recognize that adolescents may well view sexual activity not as a problem behavior brought on by loss of control during AOD use, but as a desirable activity made less awkward and more accessible through the disinhibition provided by substance use. The correlation between substance use and sexual activity may, in part, be another version of the correlation between alcohol use and sociability, where females claimed to drink "to get along on dates" and to "relax." Similarly, if early adolescent sexual experiences are viewed as a "life event" accompanied by levels of stress and anxiety, particularly for females, the relationship between sexual activity and AOD use may be an extension of the drinking-as-coping relationship. This may be particularly true for females who often bring a burden of fear, as well as feelings of guilt, to their initial experience of intercourse. Substance use may act both to diminish the fear and allay the guilt. Diminishing the immediate burden of guilt allows sexual activity to take place; coping with the aftermath of guilt allows the adolescent to accept the sexual experience without negative self-judgement. In other words, the adolescent can "blame" her sexual activity on the effect of the substance rather than her own "immorality," thus engaging in the reduction of cognitive dissonance. This allows the adolescent female to be sexually active without actually admitting that she is "really" sexually active. Parallels can be found in adolescent failure to use contraception. Contraception counselors have long recognized the challenge of getting sexually active adolescent females to use contraception, where such females "blame" their sexual activity on uncontrollable moments of passion, rather than a self-admitted and planned behavior. Finally, fear of pregnancy is not a universal deterrent either, as even runaway adolescent females may welcome a baby as a solution to lifelong feelings of alienation (Perlman 1980).

Second, given the relatively high rate of unprotected sexual activity among AOD using females, outcomes must be considered regardless of the motivational structure. This is particularly crucial in light of the spread of AIDS through unsafe sex practices, concern for the foreclosure of opportunity teenage pregnancy brings, and concern for the welfare of the child born to teenage, AOD using parents.

Kandel (1990) conducted an analysis of the two youngest birth cohorts of the National Longitudinal Survey of Young Adults (N=2,711). She found that reported prior use of cigarettes, alcohol, marijuana, and other illicit drugs greatly increased the risk of early sexual activity for both adolescent females and males. However, across the board, Kandel found higher percentages of females than males reporting initiation of AOD use prior to sexual intercourse or initiating both events in the same year. When other variables were controlled, prior use of alcohol and/or cigarettes increased the risk of early sexual experience among females by 80% (vs. 39% for males), marijuana use by a factor of 3.45 (vs. 2.73 for males), and use of other illicit drugs by a factor close to 5.00 (vs. 3.35) for males.

This supported earlier findings by Mott and Haurin (1988*) suggesting that for females in all racial groups and all but the youngest age groups, marijuana use is more strongly associated with sexual initiation than regular monthly (but not regular weekly) alcohol use. (A limitation of the Mott and Haurin study was the retrospective data collection requiring recall of drug use some 7 years earlier.)

Given the contribution of AOD use to facilitating sexual intercourse among adolescent females, it is also not surprising that it also appears related to premarital pregnancy. In a longitudinal study by Elliott and Morse (1988), not only was sexual intercourse and substance use positively associated for both genders, but among unmarried female adolescents engaging in illicit drug use at the time of onset of sexual intercourse, the risk of pregnancy within one year was higher than that of the general adolescent population. In another study of 100 unmarried pregnant adolescents, evidence suggested that their prepregnancy substance use rates exceeded national rates even for older adolescents. The respondents appeared embedded in drug prevalent environments (Gilchrist, Gillmore and Lohr 1990*).

The association between early onset of AOD use and subsequent sexual activity appears even stronger when community-based samples, not just students, are studied. In one of the few non-school-based studies of drug use and sexual activity in adolescent women, Zabin (1984) demonstrated unusually high rates of smoking in a community-based sample of young women compared with school-based studies. A strong negative relation existed between age of first intercourse and level of smoking. This negative relation also extended to contraception, thus indicating potentially higher rates of pregnancy.

Sexual/Physical Abuse

Victims of sexual or physical abuse are overrepresented among adolescent AOD users, both female and male. Dembo, Dertke et al. (1987, 1988) found both sexual victimization and physical abuse to relate significantly to feelings of self-derogation and shame and to the use of illicit drugs for both genders. They provide the following explanatory scenario: Abused children's negative self images and physical and psychological pain can be expected to lead to a number of adverse development outcomes, including involvement in illicit drug use. For those who find the world a very painful place, drugs are often taken in an attempt to escape from the pain or as a form of self-medication (Dembo, Dertke et al. 1987:17-18). The aspects of self-medication and escape from family problems in substance use by sexual abuse victims is substantiated by Harrison, Hoffman, and Edwall (1989). In further support of the victimization-self-derogation-substance use pattern, Neubauer (1989) showed sexual abuse experiences to have an impact on the self-concept, and self-concept to be strongly correlated with substance abuse in both victims and nonvictims. Edwall and colleagues (1989) also found sexual abuse victims in treatment for substance abuse to manifest a greater sense of shame than their nonvictim peers.

Given that the links between self-esteem and adolescent female substance use have already been established, the impact of sexual abuse on self-esteem increases substance abuse risk for victimized adolescent females. This is especially significant in that females are overrepresented in the numbers of sexually and physically abused. The correlation between victimization and AOD use is strong for both genders, but female adolescents are more likely to have experienced this trauma than are males. History of sexual abuse victimization is a strong predictor of substance abuse for adolescent females (Dembo, Dertke et al. 1988; Edwall et al. 1989; Harrison, Hoffmann, and Edwall 1989; Neubauer 1989; and Rohsenow, Corbett, and Devine 1988).

Several studies have documented the overwhelming representation of the sexually victimized female in substance abuse treatment settings. In a study of 444 adolescent females in chemical dependency treatment, Harrison, Hoffmann, and Edwall (1989) found sexual abuse victims, in comparison with nonvictims, began drug use earlier and were significantly more likely to regularly use stimulants, sedatives, tranquilizers, and hallucinogens. Neubauer (1989) surveyed adolescent females in treatment for substance abuse and found 58% of them to have been sexually abused. Edwall et al. (1989) found that one-third of the 597 adolescent females surveyed at inpatient facilities across five states admitted to being victimized by sexual abuse, with counselors identifying such history for an additional 10 cases.

Finally, a side effect of sexual abuse may be consequent sexual dysfunction in the victim. Wallen (1990) found attempts to cope with sexual dysfunction related to alcoholism in adult women. Eisenstadt (1990) found a parallel situation among adult women in treatment for cocaine addiction. Women may resist treatment or they may experience relapse after treatment because alcohol or cocaine allows them to enjoy sexual experiences they are otherwise unable to enjoy. In such cases, rehabilitation is equated with the loss of sexuality. It may be that the adolescent victims of sexual abuse are similarly motivated. However, even if current patterns of substance abuse do not include these motivations, studies of adult women indicate that adolescent females are at risk as they develop sexual identities.

Conclusion

Explanations vary for gender-based AOD use differences, and for the narrowing of some of those differences that has occurred. In some cases male use is decreasing, while female use is either increasing or is decreasing at a slower rate. This can result in parallel levels of behavior without necessarily representing parallel situations for adolescent females and males. Further, gender distinct *correlates* of use may lead to different *rates* of use in females and males. It is important to realize that such nonparallel motivations may be obscured by studies examining female AOD behavior only in terms of the same set of correlates examined for males. Such an approach may fail to establish that females and males have different motivations to begin and to continue involvement with a given substance. The clear need is for a set of studies that look at adolescent females on their own terms.

AOD use and abuse among both adolescent females and males is affected by a wide range of similar risk factors. Nevertheless, however spotty and inconsistent, evidence has accumulated to reveal that significant gender differences also exist. Research also indicates the importance of paying attention to the interaction of gender with specific drugs, as the same risk factors do not appear to similarly affect all drugs. Indeed, this review has illustrated the complexity of factors and processes that influence AOD use among adolescent females. For example, just as the prevalence of female adolescent AOD use varies according to substance, the correlates of female adolescent AOD use vary by substance. Thus females may become involved with multiple substances for a variety of different substance-specific reasons. Further, female adolescent use of individual substances, as well as their use of multiple substances, may depend on different conditions than does similar male behavior. For example, for both genders, tobacco and alcohol use are often described as correlated, but adolescent females may smoke for different reasons than they drink -- and for reasons not given by adolescent males.

Factors found to better predict the probability of adolescent female involvement in

AOD use than that of males include: appropriate social context, parental role models, response to life events or stress, poor self-concept, and sexuality. The research examining these correlations generally leaves reasons for such gender differences untested. In addition to having different motivations for AOD use than males, adolescent females are more likely to experience some of the conditions correlated with substance use for both genders. In other words, some situations put both female and male adolescents at risk for AOD use and abuse, but females are more likely than males to be subjected to those situations. The literature reveals two significant correlates predictive of AOD use for both females and males, but with differential gender probability: (1) physical or sexual abuse victimization; and (2) weak family bonds.

While many factors provide insight into the specific causes of AOD use for female adolescents, several other factors have been identified which appear to be protective; that is, they help explain why use remains lower among females. Those of special significance for females appear to include: (1) gender role socialization; (2) the process involved in deciding whether or not to use substances, including greater awareness of risks; (3) better resistance to peer pressure; (4) sensitivity to norms of appropriateness; and (5) strength of ties to school. Additional factors that appear especially influential in restraining rates of use prevalence and involvement appear to be: (1) later onset of use; (2) less frequent opportunities for females to use or use heavily; (3) parents whose attitudes and behaviors encourage restraint; and (4) good relations with parents. As Thompson and Wilsnack (1984:59) observe regarding alcohol consumption and many of these variables, changes in them could presage increases in use.

Taken as a whole, the data suggests several factors which especially appear to place adolescent females at risk of involvement in AOD use. Girls who seem to be most at risk are those who:

- began AOD use early;
- whose parents are AOD abusers, especially their mothers;
- are victims of physical or sexual abuse;
- have weak family and school bonds;
- are unconcerned with traditional feminine norms;
- have numerous social opportunities to use;
- have a poor self-concept, especially in regard to physical appearance;
- are having difficulties coping with stress, and life events especially involving dating and sexual activity; and
- are involved in other problem behaviors.

That a girl is experiencing one or some of these factors in themselves does not mean that she will become an AOD abuser. But as indicated by risk factor research, the more of these factors to which they are exposed, the greater is the probability of involvement (Bry, McKeon, and Pondina 1982; Newcomb, Maddahian, and Bentler 1986; Newcomb, Maddahian et al 1987*).

Further research is needed on many fronts, but particularly on the links between AOD use research concerning adolescents and that concerning young women and mature adult women. As can be seen, particularly in the case of drinking behavior and stress and depression, insight into adolescent experience may sometimes be gained by examining adult experience. More understanding is needed of the extent of continuity (or lack of it) in use patterns and correlates between adolescent and young adult women.

PREVENTION & INTERVENTION IMPLICATIONS

If gender differences in correlates of use have been largely unexplored, research into prevention and intervention targeting adolescent females has lagged even further behind. Indeed, even the few discussions of prevention for women have devoted almost their full attention to adults (Davis 1990; Ferrence 1985; Morrissey 1986). Further, the majority of prevention efforts for women have focused on awareness of fetal effects rather than primary prevention or intervention among adolescents. There are a few notable exceptions for adolescents. The Girl's Clubs of America have received funding from the federal Office for Substance Abuse Prevention to establish a National Resource Center in Indianapolis, Indiana. Camp Fire, Inc. is also developing a model AOD prevention curriculum for elementary school females. *Women as Preventors: An Adult-Teen Partnership*, developed by the National Board of the YMCA, uses role-modeling and information in a prevention curricula. Adult mentors are used in a comprehensive, intense, skill-building experience targeting vulnerability factors. Unfortunately, however, little information is available about these programs. Hynes (1989) also describes a model school-based smoking prevention program for adolescent girls.

It remains to be seen how prevention and intervention efforts can address the implications of the reviewed data and translate them into program development. The fundamental question in this regard is: To what extent are gender-specific programs, or program components, warranted and feasible? Most of the current generation of prevention programs were developed using largely middle-class white populations. As discussed in previous *Updates*, a consensus is emerging that mainstream prevention programs may not be relevant for many at-risk subgroups nor effective in addressing their risk factors. Thus, prevention efforts are needed which target specific subgroups. Would prevention efforts be improved if more attention was directed toward the specific needs of the largest subgroup of all: adolescent females?

In addition, females and males may have different rehabilitation rates through treatment. Unisex approaches to treatment may end up focusing attention on secondary correlates while neglecting primary issues. The urgency around this issue is that rehabilitation may be delayed or only temporary. It is possible that the higher relapse rates for females than males are due, in part, to missing components in the counseling process. Females and males may also have different support systems to maintain and reinforce rehabilitation success. More research is needed to determine predictable differences in the social context of rehabilitation for adolescent females and males. This is important as treatment programs and counseling components are most likely to be successful when taking into account the social context in which the reformed AOD user is attempting to maintain or reinforce rehabilitation. These gender-related issues, particularly as they concern adolescents, are underrepresented in the literature and should be considered in the design of future research. Expanding this knowledge base is essential to enhancing the effectiveness of prevention and treatment for female adolescents.

Given the evidence currently available, definitive answers to these questions are not possible. On the one hand, the similarities in etiological factors associated with use among both female and male adolescents suggests that gender-specific prevention curricula *per se* may not be necessary. Finding no significant gender difference in correlates, Selnow (1985*:337) concluded that "sex of respondents offered no basis on which to differentiate targeted programs." Furthermore, the current generation of prevention curricula and programs already target many of the risk factors identified for adolescent females (e.g., poor family situation self-concept, coping skills, social skills), and reinforce many of the protective factors such as peer resistance and emphasis on adverse effects.

On the other hand, gender differences in correlates of use have been documented with sufficient frequency to warrant further attention to at least the development of gender-specific components of prevention programs (Clayton 1991; Windle and Barnes 1988*). Substantiating this, gender differences in program evaluations have been found which suggest more attention needs to be directed toward understanding why some programs work better with one gender than the other. For example, there is some evidence that smoking prevention curricula are less effective with females than with males (Gilchrist, Schinke, and Nurius 1989). Clayton (1991:115) suggests this may be due to the different psychosocial mechanisms leading to smoking between the two genders. Evidence reviewed here supports Glynn's (1989:181) suggestion that the current group of adolescent smokers, with more girls, may represent a harder to reach group who may require different or more targeted interventions. Similarly, DeJong (1987*) found that successes for males were not replicated for females in the impact of Project DARE (Drug Abuse Resistance Education). DeJong's evaluation revealed that:

> An index of drug use formed by taking the sum of the items marijuana, speed, downers, inhalants, and PCP showed no overall differences between the two experimental groups, but a significant interaction was found whereby males who had DARE showed less drug use, whereas females who had DARE did not differ significantly from those who had not ..[When the index included additional substances] males who had DARE showed much less substance abuse, whereas females displayed few differences between the DARE and nonDARE groups (pp. 292).

Botvin, Baker, et al. (1990) found gender differences in the opposite direction in a one-year follow-up of an evaluation study testing the effectiveness of a cognitive-behavioral substance abuse prevention approach which emphasized the teaching of social resistance skills within the larger context of an intervention designed to enhanced general social and personal competence. The study involved 998 8th graders from 10 suburban New York junior high schools. Teacher-led interventions were found to be effective only when implemented with fidelity, and then primarily only among females. There were between 44% and 50% fewer female smokers in the teacher-led prevention conditions than in the control group. Similarly, there were 51% fewer females reporting alcohol use in the past week compared with the controls, and less problem drinking (i.e., fewer episodes of drunkenness) among both females and males. Finally, experimentation with marijuana was 47% lower among prevention program females when compared with females in the control condition. The reasons for this gender effect were not discussed.

Program evaluations are still few in number and even fewer have taken gender into consideration. Despite limitations, both in terms of program evaluation and in terms of adolescent female-specific AOD use and abuse research, a review of the available data about correlates of useand risk factors provides some insight into possible directions for current prevention approaches in dealing with this population. The following are some of the specific program components or strategies that should be taken into consideration.

Context of Use

Appropriateness of context has been shown to be a correlate of use for adolescent females. Prevention and intervention efforts should, therefore, consider the social context of AOD use and acknowledge the importance of addressing the environment in which decisions to use, abuse, or abstain are made. Prevention and intervention programs might be enhanced through building on adolescent female susceptibility to judgements of appropriateness, and discover means of reducing the number of contexts deemed appropriate for substance use. For example, Ferrence (1985:446) observes that, as gender differences in drinking may in part relate to the variety and numbers of drinking contexts, "prevention programs should concentrate on reducing the number of contexts in which substance use is permitted or considered appropriate. Current efforts to restrict smoking in the workplace and in public places are good examples." However, further steps are required to address use among adolescents for whom no context of use should be deemed appropriate. In order to accomplish this, additional research on how female adolescents assess appropriateness is required.

One example of educational intervention acting to reduce contexts deemed appropriate for substance use can be found in rehabilitation work with pregnant adolescents. Several studies have replicated findings that, due to concern for the unborn child, pregnant adolescent females reduce their AOD use because they no longer deem it as appropriate to their condition. In a study at Boston City Hospital, women who drank heavily were told as part of their counseling that they had a better chance of delivering a healthy baby if they abstained from alcohol during pregnancy. Two-thirds of the women participating in such counseling sessions reduced their alcohol intake before the 3rd trimester (Weiner and Morse 1990:61). Gilchrist, Gillmore and Lohr (1990) studied 100 pregnant 17-year-olds and found that :

> Although lifetime prevalence of drug use was relatively high and pregnant respondents appear embedded in drug prevalent environments, substance use declined voluntarily and substantially during pregnancy....Neither best friends' nor boyfriends' use of alcohol or marijuana predicted subjects' use of these substances during pregnancy (pp. 402).

Therefore, they conclude, one opportunity for intervention may lie "in capitalizing on and extending the voluntary drop in drug use that may occur during pregnancy." However, because pregnant adolescents are frequently not in regular schools, alternative venues for program placement must be explored (Gilchrist, Gillmore and Lohr 1990:405-406*).

Differential Effects

Given the evidence of the greater role of concerns about use risks among girls, programs should stress ways use especially affects them. Most drug abuse information directed specifically to females is limited to potential adverse fetal effects during pregnancy, without addressing risks to the adolescent herself. Youth need to be more aware that girls and boys appear to react to drugs differently in many ways.

The research by Frezza and colleagues (1990) confirms that drinking holds special risks for women. In particular, women must be more cautious about the amount of alcohol consumed in social drinking, as moderate drinking for men is not moderate drinking for women. Adolescents (female and male) must be informed that females experience greater intoxicating effects of alcohol due to their biological differences. It should also be stressed that these findings are not to be interpreted to mean that men can drink more because they can handle it better as other factors, such as actual drinking patterns, can mitigate biological differences.

The evidence that girls who do use drugs may experience more drug-related problems also needs to be emphasized. There are also sex-specific risk associated with smoking among women, such as increased risk of coronary heart disease, especially among oral contraceptive users.

Dissemination of Information

The literature suggests that lower use rates among adolescent females is related to their tendency to weigh alternate sources of information, engage in a reasoning process, and assess risk and potential harmfulness of drugs. This speaks to the importance of prevention and treatment programs making credible presentations of the potentially harmful aspects and risk factors associated with substance use and abuse. Credibility is an important factor due to the highly evident tendency to resort to scare tactics in information and education programs. Scare tactics have been shown to be ineffective and to lower credibility among youths who "could observe readily that friends and acquaintances who used marijuana did not suffer such disastrous consequences" (Bachman, Johnston et al. 1988). In fact, according to Jessor (1985:258), "the consensus among most researchers is that information alone is not effective in influencing behavior, and that negative information or 'scare tactics' are especially ineffective." This agrees with observations that increased perception of risk has been concurrent with more balanced reports on health and psychological consequences (Bachman, Johnston et al. 1988). Implications are that educational approaches to prevention need to include components that help adolescents develop their reasoning abilities and critical thinking skills, as well as providing general and gender-specific information (such as different biological impact of alcohol on females and males). Certainly the most successful approaches to changing adolescent contraceptive practices have been those which, not only provided information, but addressed adolescent reasoning and critical thinking skills as well.

Educational Attachment

Although for adolescent females ties to family are often weak, ties to school tend to be relatively strong. This has proven to have a deterrent effect on substance use. Clearly, prevention and intervention should involve components which work to keep adolescents in school, strengthen their commitment to school, or return them to school if they have left. The role-model effect found in an adolescent female's propensity to drop out, and engender greater risk for drug use, when her mother has low educational attainment again dictates the need for active use of alternative role models in prevention and intervention approaches.

Family Education

Prevention and intervention programs can also benefit from considering the family context of the female adolescent user. The correlations between family bonds and levels of substance use, taken in conjunction with the likelihood that female adolescents have weak family bonds, indicate the need for family counseling components in prevention and intervention programs. Further, as daughters, more than sons, seem to model their parent's drug use, such behavior-modeling tendencies need to be addressed, perhaps through the provision of alternative role models. As Thompson and Wilsnack (1984:47) observe, the evidence that parental drinking influences drinking behavior of adolescent daughters more than sons suggests that parents also may have better opportunities to protect daughters than sons against excessive or problem drinking by the ways that parents themselves drink.

Peer Pressure

The literature suggests that for female adolescents the strength of attachment to peers is not as significant in relation to substance use as for males. Considering how many prevention strategies target peer pressure, the divergence between male and female susceptibility to peer pressure may be important. For example, as the goal of project DARE is the enhancement of skills for resisting peer pressure to experiment with alcohol and other drugs, the project may be irrelevant where peer pressure is not a strong correlate of drug use. This could explain the gender differences found in its outcome. It should be remembered, however, that findings regarding differential resistance to peer pressure between genders is inconclusive.

Resistance Skills

The evidence of the relatively higher frequency with which women are offered drugs by others points to the importance of teaching resistance skills. While most current prevention programs stress the acquisitions of skills to resist pressure to initiate drug use, adolescent females in particular may need more specific skills in resisting pressure to use from adolescent males, particularly in dating situations. As shown, many of the situations involving initiation of use involve use with opposite sex.

Risk Reduction

More generally, strategies need to be developed and taught about how to resist (and hopefully avoid) placing themselves at risk from the AOD use of others. One of the greatest alcohol-related risks posed to adolescent females is the high level of drinking by adolescent males. Room (1981) has argued that the greatest alcohol-related problem women have is their men's drinking. The risk is manifested in: psychological and physical damage; increased drinking from frequent association or cohabitation with men who drink heavily; automobile accidents; and sexual assault. The extent to which this also applies to adolescent females needs to be further explored, but a 1985 Gallup poll found that 54% of all females age 16-18 have been passengers in a car when the driver was under the influence (Milgram 1990:87). In most cases, such drivers are male. Females need to be taught to avoid risky situations when riding with a male drive (Farrow and Brissing 1990:220). Similarly, female adolescents must be made aware of the relationship between drug use and sex, AIDS, and date-rape, as discussed further below.

Self-Esteem Enhancement

Prevention efforts and interventions often address self-esteem, but without focusing on the *source* of self-esteem damage. Specific counseling needs, rather than generalized esteem-building exercises, may be called for. Windle and Barnes (1988*) concluded that if the gender differences they observed in self-esteem and drinking for escapist purposes are supported by future research, differential preventions/interventions based on gender-specific vulnerabilities may be warranted. In view of smoking and amphetamine behaviors related to appearance and self-image factors, it would seem important to maintain self-esteem components in prevention programs. However, findings are in conflict as to the general strength of such correlations. Some evidence suggests that female smoking is associated with self-confidence, social experience, and rebellion, whereas male smoking is associated with social insecurity. Clayton (1991:118) notes that "if this characterization is accurate," prevention programs that stress self-esteem and social skills building "may not be optimal for teenage females."

Sexual Abuse

The high rate of sexual abuse found among females with AOD problems indicates counselors and other practitioners may need to explore this issue in helping female clients to recovery. Based on research conducted with adolescents in treatment, Neubauer (1989) urges substance abuse treatment programs to attend to the issue of sexual abuse in working with female adolescents. Rohsenow, Corbett, and Devine (1988) warn that failure to address unresolved issues from childhood sexual abuse may lead to rapid relapse among the apparently rehabilitated. Wallen (1990) and Eisenstadt (1990) jointly warn that sex therapy may be a necessary companion to substance abuse counseling.

Sexual Behavior

The fear of teenage pregnancy and the limitations it creates in young lives, in addition to the threat of AIDS, adds to the sensitivities surrounding the issue of teenage sexual activity. As a result, most discussions of adolescent sexuality and drug use couple these behaviors as deviant or problem behaviors. What must be remembered, is that sexual activity may be regarded quite differently by adolescents than by adults worrying about consequences for adolescents. Prevention programs need to teach females about how to cope with anxieties about dating and sex without resorting to AOD use, especially as AOD use will increase the risk of early sexual experimentation and even pregnancy. However, it can be argued that adult concerns about adolescent sexuality are not similarly felt by the adolescent female. Warning teenagers that AOD use may promote loss of control over their sexual restraint may not be a deterrent to drug use. In fact, it may well appeal to a subtextual motive on the part of females. Instead, programs concerned with the relationship between unprotected sexual behavior and drug use may well need to accept adolescent sexuality as a fact and include critical thinking components which target self-protection and risk issues rather than sexuality and pregnancy *per se*. Nonjudgemental approaches to adolescent female sexuality are required.

Stress Reduction & Coping Skills

Strategies that have been developed for primary prevention among women have emphasized the importance of the association between the experience of stress and female alcohol abuse, and suggest targeting women experiencing stressors (Morrissey 1986:237). However, again, little attention has been devoted to the specific stressors and problems facing adolescents. Programs for female adolescents might target cognitive beliefs regarding the use of alcohol as a selected coping strategy in times of stress, or might include a component which addresses issues pertinent to the causes and correlates of distress symptoms in addition to problem behavior. Evidence of gender differences in susceptibility to problem behaviors could influence multiple levels of a comprehensive prevention and intervention program. The extant data are limited, but possible prevention and intervention implications suggest such gender differences may merit increased attention.

Drug-Specific Considerations

Clearly, AOD programs for female adolescents must especially emphasize the risks associated with alcohol, tobacco, and amphetamines, countering the benefits in use specifically perceived by females. The high rates of cigarette smoking must especially be addressed. This is important not only because of the high rates of use and heavy use among young women, but because of the association of heavy tobacco smoking with future AOD use and other problem behavior. Research (Kandel 1975; Welte and Barnes 1985; Taub and Skinner 1990*) has shown that cigarettes often form a "stepping-stone" to marijuana use, particularly for young women.

Information about amphetamine use should counter its perceived benefits in weight reduction. Clearly, particular attention to enhanced self-concept in the area of personal appearance is required. Perhaps this could be accompanied by better education on healthy weight control practices.

Targeting High Risk Populations

Consistent with the growing call for prevention efforts to target high-risk populations (Austin 1988; California Office of the Legislative Analyst 1990; Executive Office of the President 1989), more attention certainly needs to be directed toward that minority of girls who are at risk or already heavily involved, in AOD use. Gender differences between occasional and moderate users appear to be small. On the whole, gender is not a strong differentiator between users and nonusers among adolescents for the most commonly-used, and thus more socially acceptable, drugs within the adolescent subpopulation. This is not the case, however, in regard to heavy use. The female heavy user is likely to be especially troubled, dysfunctional, and deviant simply because her behavior is viewed as inappropriate both by society at large and by their gender peers. Thus enmeshed in syndrome of problem behaviors. Particularly with this population, prevention and intervention efforts directed at all problem behaviors therefore need to be integrated. This is also a population which may experience more alcohol-related problems than even heavy using male peers, including higher suicide rates. Such problems may well increase as the current declining trend among mainstream youth will leave their behavior even more non-normative.

In this regard, adolescent females should be targeted for prevention programs who are characterized by high-risk factors such as: parents who are AOD abusers; physical or sexual victimization, weak bonds to family and school; poor self-concept; heightened concerns over physical appearance, dating, and sexual activity; difficulties coping with stress; depression; and involvement with other problem behaviors. If these characteristics are accompanied by early onset of smoking or alcohol use, the youth should especially be considered at high-risk for becoming heavy users and progressing to use of illicit drugs and well as other problem behaviors.

Conclusion

Overall, the evidence would suggest that current prevention programs already are addressing many of the risk factors adolescent females face, but that, at the same time, there is a need to more fully address some of the specific risk factors which most affect females. Since many of these factors relate to relationships with males and issues which may require same-gender discussions, separate program components or modules for females appear warranted. Clayton (1991:120) has suggested one such mix in regard to tobacco education. She concluded that factual information on health hazards of smoking can be taught in mixed gender classes. However, she specified that discussion groups, role playing, and other awareness and skill building activities may be more productive if females and males are separated. Such gender separation is "logistically inconvenient, yet no more so than ability groupings commonplace for teaching math and reading." Along such lines, more efforts must be directed toward the development and evaluation of strategies that can be most efficiently and cost effectively used to supplement current curricula to more effectively address the needs of this, the largest single special population of adolescents.

ABSTRACTS

BECK, KENNETH H., and SUMMONS, T.G. 1987. Adolescent gender differences in alcohol beliefs and behaviors. *Journal of Alcohol and Drug Education* 33:31-43.

An anonymous alcohol survey questionnaire was developed and administered to 2,720 female and male students in a suburban high school in the Washington, D.C., metropolitan area (Prince George's Country, Maryland). The questionnaire included measures of alcohol consumption, beliefs, information sources, and abuse. The students who returned questionnaires constituted 95% of the total school enrollment, representative of grade level, gender and race.

The sample was comprised of 1,169 females (50.5%) and 1,144 males (49.5%) in grades 9-11. There were 1,880 whites (81.3%), and 431 nonwhites (18.7%). Religious affiliation in the sample was: 19.3% Protestant, 43.5% Catholic, 45% Jewish, and 30.3% other religion (2.3% did not respond).

The questionnaire determined the prevalence of alcohol problem symptoms and abuse based on: measures of alcohol consumption; consumption behavior; the effect of consumption on other activities; and drunk driving. The questionnaire also measured risk beliefs and information sources concerning both alcohol consumption and drunk driving. A short version of the Marlow-Crown Social Desirability Scale,was used as a means of checking the validity of the self-reported responses. The Chi-square test analyzed male and female differences in alcohol consumption, abuse, risk beliefs and sources of information.

Results. ***Alcohol Consumption.*** Females consumed significantly less beer, wine, and spirits than males. Approximately, 12% females and 38% males consumed six or more beers per drinking occasion. Females also consumed beer and wine significantly less frequently than males, but the genders did not differ significantly in frequency of liquor consumption. Females started to drink alcohol at a later age than males. Females reported a significantly lower incidence of abuse. Fewer females than males reported being drunk once a week or more frequently (16% vs. 21%) and driving under the influence at least once a week or more (0.7% vs. 3%). However, females and males did not differ significantly on alcohol problem symptoms.

Risk Perception. Females perceived greater risks associated with drinking in general and in being caught by police or causing an accident while drinking. Males showed greater belief in risk control and avoidance of adverse consequences.

Sources of Information. The genders differed greatly in regard to their best source of AOD information and where they would go if they had questions and needed answers. Females chose the mass media, newspaper, TV and movies as their *best* source of information. Further, females (16.6%) were less inclined than males (24.3%), to indicate their own experience as the best source of AOD information. Females and males also differed significantly in their *first* source of information. Although, both females (33.7%) and males (33.4%) reported turning first to their families, females reported using their friends (33.5%) more than males (27.7%).

Conclusion. Teenage alcohol-related risk-taking injuries and fatalities continue to be a concern of American society. This survey showed very clear differences in alcohol use, abuse, risk beliefs, and sources of information between adolescent females and males. Beck and Lund (1981) found that effectiveness at being able to avoid getting caught by police, and avoid causing accidents while drinking and driving, were strongly related to drinking and driving attitudes, intentions and subsequent drunk driving behavior. This survey shows that adolescent females do consume less alcohol, evidence less alcohol abuse, believe drinking and driving are more risky, and believe that they have less control (personal effectiveness) over the risks of drunk driving than do male adolescents.

Although significant differences are detected, the influence of family and friends are important for females and males alike. Results indicate that a comprehensive multilevel community effort for alcohol abuse prevention is required. Too often such alcohol/drug education is relegated to schools where it is poorly or incompletely taught. Coordinated school-based community and mass media messages can be effective at increasing adolescent awareness, attitudes, and positive behavior change for targeted audiences. However, accurate information needs to be provided along with appropriate behavioral skills to resist peer and negative media influences to use and abuse drugs.

CARR, CHRISTOPHER; KENNEDY, S.R.; and DIMICK, K.M. 1990. Alcohol use among high school athletes: A comparison of alcohol use and intoxication in male and female high school athletes and non-athletes. *Journal of Alcohol and Drug Education* 36(1) 39-43.

Alcohol and other drug abuse among high school female and male athletes was compared to AODA among non-athlete peers. Historically, society has held myths that high school athletes avoided alcohol and other drugs because of training and lack of time. Publicity surrounding drug-related deaths of several famous professional athletes, has boosted public interest in how alcohol and other drugs have affected the lives of athletes.

A survey was given in a large midwestern suburban high school of 2,000 white students. The sample consisted of 204 female athletes and 337 male athletes with a comparison sample of 601 female and 571 male non-athlete peers. A thirty-eight item self report survey was used. A Chi-Square analysis indicated a significant difference ($p < .05$) between athletes and non-athletes in frequent alcohol consumption.

Female results demonstrated no significant difference in alcohol frequency consumption between athletes and non-athletes. Conversely, half (50.1%) of the male athletes, reported the use of alcohol, compared to 41.3% of non-athletes ($p = .02$). In addition, more male non-athletes (10.8%) reported total abstinence from consumption than did male athletes (7.5%). Male non-athletes (47.9%) tended to be more experimental in their consumption than male athletes (42.4%).

No significant differences were noted between the female and male athlete frequency of alcohol consumption, however degree differed. Just over half (58%) of the female athletes reported having experienced intoxication, compared to nearly three-fourths (73%) of the male athletes ($p < .001$). Regarding intoxication experience, no significant difference existed between athletes and non-athletes within gender groups.

There appears to be no difference in the frequency of alcohol use or abuse between female athletes and non-athletes. However, the observed tendency of male high school athletes to use and abuse alcohol more frequently than their non-athlete counterparts, appears to put athletes at a greater risk for future harmful results if this behavior carries over into adulthood. These results support the research of Heyman (1986) that the "macho" image assumed by many male athletes is associated with frequent and hard drinking, but that this association does not exist for females. It would also appear that previous findings indicating that females tend to drink smaller quantities of alcohol in a single setting than males (Johnston, O'Malley, and Bachman 1985) also apply to female and male athletes.

A need for our educators to address both female and male athletes on the risks associated with AOD use is indicated. However, the focus should clearly be on male athletes who appear to be at greater risk than most students. It seems imperative that AOD education and intervention programs be a part of the ongoing training of professionals in these areas. The findings also indicate a need for additional research with athletes in this age group, involving both student athletes and non-athletes of various racial and socioeconomic groups using marijuana and cocaine. The risk of participation must be identified and addressed in order to best prepare and assist professionals who work with younger, less notable athletes.

DEJONG, WILLIAM. 1987. A short-term evaluation of Project DARE (Drug Abuse Resistance Education): Preliminary indications of effectiveness. *Journal of Drug Education* 17(4)279-294.

This 1986 national short-term evaluation was designed to assess the impact of Project DARE (Drug Abuse Resistance Education), a joint project of the Los Angeles Police Department and the Los Angeles Unified School District, on the knowledge attitudes, and self-reported behavior of seventh grade students who received the full semester DARE curriculum during sixth grade. The DARE group (288) was compared with a No DARE control group (310) for four junior high schools selected by the school district staff.

A comparison between the two groups in language spoken in the home showed the DARE group included a far greater number of students from Spanish-speaking homes, while the No DARE group included a greater number of students from English-speaking homes, and from homes in which other non-English languages were spoken. Students in the DARE group had significantly lower grades in English during the first semester. In addition, students in the DARE group reported significantly less frequent use of cigarettes and hard liquor since graduation from sixth grade.

For females, few differences between DARE and No DARE groups were found. Whereas, males in the DARE group showed less substance use than those who had not had the DARE curriculum. Females who had DARE evidenced somewhat more negative scores for the drug *knowledge* and *attitude* index, while males who had DARE evidenced more positive scores. On the drug *use* index (formed by taking the sum of the items: marijuana, speed, downers, inhalants and PCP) no overall differences were found between the DARE and No DARE groups, but a significant gender interaction was found, whereby boys who had DARE showed less drug use, and girls who had DARE, did not differ greatly from those who had not. These gender differences are in sharp contrast to outcomes reported in earlier evaluations of Project DARE, for reasons that are unclear.

Overall, results strongly suggest that the Project DARE police officers are succeeding in teaching their students how to resist peer pressure to experiment with substances and to apply those lessons in their lives. It should be noted, however, that subjects in this study, are at an age when the pressure to experiment with alcohol, tobacco, and drugs is not yet in full force. At this young age, the vast majority of students, whether they have had the full DARE curriculum or not, report no substance use. Clearly, a longitudinal evaluation of Project DARE is needed to assess its impact on students as they reach high schools.

FORNEY, PAUL D.; FORNEY, M.A., and RIPLEY, W.K. 1988. Alcohol and adolescents: Knowledge, attitudes and behavior. *Journal of Adolescent Health Care* 9:194-202.

Alcohol use among young adolescents appears to be correlated with some specific demographic and sociocultural factors. Females drink less than males; black students drink less than white students; and alcohol use increases with age. Students from the 6th-, 8th-, 10th- and 12th-grades in six school districts throughout Georgia and South Carolina, were surveyed to determine their knowledge, attitudes, and behavior regarding alcohol use. The sample consisted of 3,017 students, 52% female and 48% male. Both Georgia and South Carolina had comprehensive programs designed to enhance factual information and responsible attitudes toward alcohol use.

Results. Neuman-Keuel's multiple comparison test showed that females had a significantly more conservative attitude toward unacceptable uses of alcohol than males. The relationship between knowledge and drinking behavior was also found to be meaningful for both females and males, as well as for whites but not for minorities. Females and males did not differ significantly in their knowledge. The fastest learning rate for knowledge about alcohol, appeared to begin after age 13 and continue through age 17, at which time it leveled off. Apparently, efforts to teach adolescents about the nature and effects of alcohol have their greatest impact during junior and high school periods, whereas trying to teach younger age children about alcohol may have little or no effect on their knowledge level.

Students for whom school is their primary source of information about alcohol may have the most conservative attitudes about unacceptable uses of alcohol, followed by those relying on audio visual media (TV or radio), and parent's information. Obviously schools, TV, radio, and parents contribute greatly in telling students what not to do when it comes to alcohol use. In contrast, school, TV, radio and parents appeared to have little or no significant influence on student's attitudes toward acceptable uses of alcohol. This suggests that information sources focus on unacceptable alcohol use and not on responsible drinking.

Conclusion. Alcohol is part of our society and it seems clear that most adolescents will experiment with it. Leaving students to find out about alcohol on their own may lead to serious consequences. Effective resources of information should help students decide when and how alcohol use is acceptable, as well as negative aspects of drinking.

FORNEY, PAUL D.; FORNEY, M.A.; and RIPLEY, W.K. 1988. Profile of an Adolescent Problem Drinker. *Journal of Family Practice* 27(1) 65-70.

A number of studies indicate that young women drink less than young men, minorities less than whites, and young students less than older adolescents. Parental and peer influences have also contributed to problem drinking among adolescents. Twenty schools in six school districts in Georgia and South Carolina participated in a study involving 3,017 students to determine what sociocultural and demographic variables can be used to identify potential problem drinkers among adolescents in middle and high schools. Significant relationships were found between gender, student drinking behavior, race, age, mother's drinking behavior, father's drinking behavior, and best friend's drinking habits.

Results. Eighty percent of the sample had tried alcohol at some time; more than one third (39.2%) had done so when they were younger than 11 years old. Over one half (51.2%) took their first drink in their own home under parental supervision. The number of abstainers decreased as the students got older. The number of heavy drinkers increased dramatically at ages 12 to 13 (from 2.3% at age 11 to 14.4%). The majority of drinking students under 12 years of age usually drank with parents or other adults (71.4%), but after the age of 13 years, this trend changed, with an ever-increasing percentage indicating that they drank with friends their own age: 50.5% among those aged 14 to 15 years; 69.2% among those aged 16 and 17 years; and 72.8% of those over age 17 years. Most did not perceive peer pressure to drink (69.1%). An overwhelming number (90.7%) indicated that they did not exert pressure on others to drink.

The student most likely to be self-classified as a heavy drinker was male, white, between 14 and 15 years of age, and had parents and best friends who were heavy drinkers. He begun drinking early (before age 12), first drank outside the home, and prefers spirits over beer and wine.

Student abstainers are more likely to have nondrinking mothers. These findings were consistent across categories of gender, race, and age. For drinking students, mother's drinking behavior and that of the subjects were correlated for both genders and races. However, female students, minority students, and respondents younger than 12 years or between 12 and 13 years seemed to be more profoundly affected by the mother's heavy drinking than were male students, white students, and students in the older age groups.

Similarly, female and minority students seemed to be affected more adversely by the heavy drinking behavior of the father, than were the male and white students.

Although students tended to identify their drinking behaviors more with both parents at a younger age, as they got older, the relationship between drinking habits of students and their friends also became strong. Students perceived their best friend to have the same drinking behavior as their own. This effect was evident across categories of gender, race, and age.

The student who is a heavy drinker tended to have more knowledge about the nature and effects of alcohol than the light drinker or the abstainer. The heavier drinker also had more liberal attitudes toward acceptable uses of alcohol, such as drinking with the family at meal time, drinking for religious purposes, or drinking on special occasions such as birthdays or weddings. These findings were not found to differ by gender, race, or age.

Conclusion. These results can be used for early recognition of problem drinkers and intervention to reduce the alarming number of adolescents struggling with alcohol problems.

GILCHRIST, LEWAYNE D.; GILLMORE, M.R.; and LOHR, M.J. 1990. Drug use among pregnant adolescents. *Journal of Consulting and Clinical Psychology* 58(4):402-407.

Despite concern over the co-occurrence of substance use, unplanned pregnancy, and other problem behaviors in adolescence, little information is available on substance use before, during and after adolescent pregnancy. The authors report on data collected from 2 hour face-to-face interviews with the first 100 subjects enrolled in an ongoing longitudinal study on adolescent drug use before and during pregnancy. The subjects were age 17 or under, living in a large metropolitan area in the Northwest, and were recruited from prenatal clinics serving inner-city, low-income populations; from alternative educational programs for pregnant and parenting teenagers; and from social service agencies serving adolescents. Young women in detention or who had police records were not actively recruited.

The sample was intended to reflect those young women who show up voluntarily at health and social service agencies in the general community. The authors use data collected from interviews to determine relationships among drug use, sexual behaviors, and repeat pregnancy.

Results. Subjects ranged from ages 14 to 17, on an average were 28 weeks pregnant, and 70% were pregnant for the first time. Although Asian and Pacific Islander, Latino, and Native American adolescents were included, they combined to constitute only 20% of the sample; 33% were African American and 47% were white. Urine samples were collected from a randomly selected 50% subsample to verify self-reported drug use; in only 3 cases was there a discrepancy between self-reported use and urinalysis.

The pregnant sample reported comparable or higher lifetime use rates for all substances when compared with the female high school senior sample. Particularly high rates are reported for marijuana and cocaine use. A significant relationship existed between age of initiation of cocaine use and the frequency of prepregnancy use. Weaker initiation age and prepregnancy use rates are suggested for other substances.

As a group, subjects lived in environments containing relatively high rates of licit and illicit drug use and easy access to drugs. Despite the drug-use environment however, rates of use for all measured substances dropped significantly during pregnancy. These findings were reflected for the unmeasured substance, tobacco; 68% of the 77 subjects who smoked before pregnancy reported smoking less or much less during pregnancy. Cigarettes excepted, prepregnancy use rates predicted use rates during pregnancy better than typical influence variables such as boyfriend's use or best friend's use. Smoking was best predicted by best friend's use, however.

Conclusions. Data suggest that pregnant adolescents have higher prepregnancy use rates than the comparable nonpregnant peer group. Further, adolescents planning to carry infants to term live in environments where drugs are easily available and where interpersonal partners and

social supports have greater than average use. However, data also suggest that during pregnancy, subjects are typically able to maintain a lower use or nonuse status despite use patterns of their social support networks.

Capitalizing on this voluntary drug use seems a good opportunity for prevention-intervention. However, because pregnant adolescents are typically outside the conventional classroom environment, prevention programmers will need to look beyond usual school-based programs to help this group.

GRANT, BRIDGET; HARFORD, T.C.; and GIRGSON, M. 1988. Stability of alcohol consumption among youth: A national longitude survey. *Journal of Studies on Alcohol* 49(1):253-260.

Data for this study were drawn from the 1982 and 1983 panels of the National Longitudinal Survey (NLS) of Labor Market Experience in Youth. The data were analyzed to describe alcohol use patterns over a 2-year period for each respondent, during the transition years between adolescence and young adulthood (ages 17-24). The original NLS sample (12,686 respondents in 1979) consisted of African Americans, Latinos, economically disadvantaged non-African American and non-Latino youth, and young military men. This study is based on data from the 95% still remaining in the NLS in 1982 and 1983. Rates of incidence, remission, and abstinence were examined for current use (any amount of alcohol in any frequency during past month) and heavy use (drinking 6 or more drinks on at least 2-3 occasions during past month).

Results. A small portion of the sample were lifetime abstainers, with more females (7.2%) in this category than males (4.9%). Fewer females (70.5%) than males (80.5%) were current drinkers (consumed alcohol in past month). And fewer females (33.3%) than males (58.4%) were heavy drinkers. These prevalence figures remained consistent for 1982 and 1983. Prevalence differed by gender in all four consumption levels: (1) abstinence (no alcohol consumption in 1982 and in 1983); (2) incidence (absence of a particular drinking level in 1982 with its onset in 1983); remission (presence of a particular drinking level in 1982 but its absence in 1983); and chronicity (maintained drinking level in 1982 and in 1983). Females were more often abstainers than males; had a lower rate of incidence; a higher rate of remission; and a lower rate of chronicity. Thus, for young adults aged 17-24, female drinkers are more likely than males, over time, to not drink at all, or to be drinking less than in previous months. Consequently, for this age group, females are less likely than males to maintain or increase a given drinking level over time.

Although overall prevalence rates for current and heavier drinking remained stable over this period, youth moved into and out of various drinking level categories. The overall prevalence of each consumption level increased between the ages of 17 and 22, but declined thereafter for each gender until the age of 24. Changes in prevalence from 1982 to 1983 were a function of changes in drinking level status. Turnover in current and heavier drinking levels indicated continuity in drinking behavior over time.

Data suggested a clear gender difference in continuity of drinking level status. Overall, 81.4% of females and 90.7% of males reported current drinking in 1982 and remained at that level in 1983. Smaller percentages of men (76.5%) and women (58.2%) continued heavier drinking compared to current drinking between those years. These findings are consistent with Donovan, Jessor, and Jessor (1983), who found that drinking during adolescence appears to constitute a greater risk for later problem drinking in young men than it does in young women. They hypothesized that growth into adulthood involves the assumption by young women of roles and life situations that place greater constraints on their continuing use of alcohol than do roles adopted by younger men at the same age.

Social-learning theory suggests that socialization of children of both sexes not only occurs directly through observational learning but also evolves in an anticipatory manner, with certain behaviors learned early in life only performed when the age and social status at which the behavior is appropriate is reached. Both direct and anticipatory socialization may operate more strongly in childhood among women resulting in heightened normative constraints against heavy involvement in drinking as adolescents.

One issue that cannot be ignored is the difficulty encountered in defining a meaningful dependent variable. Similar to the dilemma faced by other researchers in the field, it is not clear whether operational definitions of current and heavier drinking are, or should be related to problem drinking later in life. The relationship between levels of alcohol consumption at any stage in the life cycle and subsequent pathogenic or sociogenic effects, have not been firmly established. The data necessary to explicate this relationship requires information on turnover in alcohol consumption levels over the entire life course.

GROSS, JANET, and McCAUL, M. 1990-91. A comparison of drug use and adjustment in urban adolescent children of substance abusers. *International Journal of the Addictions* 25(4A):495-511.

Adolescents with a positive family history of drug abuse or alcoholism (N=54) were compared to a similar group of low-SES, urban youth who were at risk for school failure but did not report any family history of substance abuse (N=34). A survey of depression, self-esteem, behavioral competence and dysfunction, and drug/alcohol use found that, overall, adolescents with a positive family history (FHP) for substance abuse exhibited more use of illicit drugs compared to those with a negative family history.

Results. In overall prevalence of drug use, there was little group difference for tobacco, alcohol, and marijuana, but FHP tended to reported higher levels of use of the eight other illicit drugs that were examined. The overall trend in use suggested that FHP youth were experimenting earlier and at greater rates with all of the illicit drugs except marijuana and barbiturates, compared to FHN youth. This increased level of use was considered striking given the significantly younger mean age of the FHP youth in the sample.

FHP youth exhibited more behavioral problems compared to FHN in the areas of somatic complaints and undercontrolled, impulsive behaviors. The groups, however, did not differ on any other behavioral measures nor on self-esteem or depression.

The "most striking" finding was the number of FHP girls who scored in the clinical range for number of total problems on the Youth Self-Report (YSR) form of the Child Behavior Checklist, which reflected a pathologically high level of symptom reporting on a very broad range of items such as headaches, trouble sleeping, fears, sadness, strange thoughts, fights, disobedience, moodiness, lies, etc. Almost one half of the FHP girls scored in the clinical range, compared with 8.3% of the FHN girls. Similarly, a greater proportion of the FHP girls were in the clinical range of the Somatic scale of the YSR (30.8% vs. 0%) and the Beck Depression Inventory (21.4% vs. 0%).

There was virtually no difference between the FHP and FHN boys who received at least one test score in the clinical range. However, being a girl from a FHP family conferred a greater risk of receiving a score within the clinical range. In all, it appears that adolescent female children of abusers of alcohol and other drugs have levels of distress that are clinically significant, resulting from their family history.

Conclusion. Among youth sharing a wide range of risk factors for substance abuse, those with a family history of AOD abuse do not generally appear different from those without a family history of AOD abuse. Nevertheless, a moderate percentage of FHP youth experience significant psychological distress and/or behavioral disturbances. In planning for mental health services and designing prevention interventions for high-risk youth, besides identifying high-risk characteristics such as family history of substance abuse, fairly simple assessment of psychosocial functioning would be useful in targeting those youth experiencing the most distress.

Youth with a family history of AOD abuse, combined with a multitude of other risk factors for substance abuse, are, on the average, not different from similar youth without a family history of drug/alcohol abuse, or from the normative sample data which are based largely on youth from White, middle-class backgrounds. What is important, though, is that a moderate percentage of the FHP youth are experiencing significant psychological distress and/or behavioral disturbances as measured by standardized instruments. It is this information about he outliers which may be valuable in planning for mental health services and designing prevention interventions for high-risk youth. Namely, in addition to identifying high-risk characteristics such as family history of substance abuse, fairly simple assessment of psychosocial functioning would be useful in targeting those youth experiencing the most distress."

HARFORD, THOMAS C.; and GRANT, B.F. 1987. Psychosocial factors in adolescent drinking contexts. *Journal of Studies on Alcohol* 48 (6):327-341.

Data from the Research Triangle Institute's 1978 national survey of senior high school students were analyzed to examine alcohol use among American teenagers and the environmental and personal characteristics scales related to drinking. Predictive variables, analyzed using canonical correlations, included environmental context measures, positive drinking functions, perceived environmental drinking models, personal attitudes, and values.

Results. The strongest relationship was defined by the perceived normative support for drinking, accounting for 58% and 55% of the variance in drinking context items for females and males, respectively.

Female and male students residing in larger communities with higher per capita consumption were characterized as drinking in adult contexts, but not in contexts involving driving or sitting in cars and drinking. In the analyses of perceived normative support, the most important combination of drinking context variables among females and males was the frequency of drinking at teenage parties, at teenage hangouts, and to a lessor degree, at adult parties, during school activities and while driving around in cars.

Unlike other canonical solutions, personal attitude and value variables produced somewhat different solutions for females and males. For both females and males, a relationship exists among low religiosity, low expectations, high peer compatibility, and frequent drinking in peer contexts, at adult parties, and while driving around in cars. In addition, for females, but not for males, low values placed on academic achievement and high values for independence were strongly related to the frequency of drinking in identical contexts. Small but significant variance in drinking contexts was also accounted for by a second canonical correlation in which, among females, low religiosity and high academic expectations were related to drinking at home at mealtimes, and on special occasions, drinking at adult parties, but not drinking in cars. For males, low religiosity, high academic expectations, good personal adjustment, and parental compatibility were associated only with drinking at home at mealtimes and on special occasions.

For females, driving in cars made the least negative contribution to the drinking context variate, but the greatest for males. The strong negative contribution of driving in cars for males may reflect different access to automobiles between females and males, irrespective of city size.

The finding that high values on independence and a low value for academic achievement, were related to peer drinking context for females and not males suggest that for females, unlike males, both relaxation of personal control (low religiosity) and personal instigation influence the selective entrée into peer drinking context. An independence-achievement disjunction may lead to the repudiation of academic achievement as a goal in favor of more accessible goal of peer group recognition for drinking.

Drinking for conformity and status transformation functions were not found to relate to any drinking context variable. Several surveys on adolescent drinking that measured the extent to which teenage drinking was a function of perceived pressure from drinking companions have found that drinking to conform is not a major factor in student's drinking behavior. However, status information, characterized by anticipatory socialization functions of adolescent drinking, has been consistently found to be an important explanatory reason for teenage drinking. The discrepancy between results and literature with respect to status information, may reflect the declining importance of role models in adolescent culture.

JOHNSON, RICHARD E., and MARCOS, A.C. 1988. Correlates of adolescent drug use by gender and geographic location. *American Journal of Alcohol and Drug Abuse* 14(1) 51-63.

Correlates of self-reported lifetime use of alcohol, marijuana, amphetamines, and cocaine were examined for a sample of almost 7,000 high school sophomores in Arizona and Utah. Two independent sets of data collected in 1984 in Arizona and Utah were used. An almost identical questionnaire was administered to all high school students in attendance on a particular day. The sample included 324 females and 272 males in Arizona, and 3,330 females and 2,969 males in Utah.

Results. Correlates of drug use including parental attachment, religious attachment, conventional values, and drug-using friends indicated very similar patterns by gender, but interesting differences by location.

Parental and religious attachment appeared to be more relevant for females than for males, based on zero-order correlations for combined drug use, but partial correlations revealed that controlling for the effects of other variables eliminated the difference. Thus, for combined drug use, there were few gender differences in either Arizona or Utah. In both locations, the independent effect of drug-using friends was of greatest significance for both genders.

However, geographic location made a greater difference than gender in the strength of correlations among given variables. For females and males, religious attachment and conventional values were more predictive of drug use in Utah, while educational attachment had a strong effect among males, but not females in Arizona.

Similar results were found by specific drug type with significant differences between Arizona and Utah for both genders. Alcohol is the only drug for which parental attachment seems especially relevant for females and this is more true of Arizona than Utah (Arizona: partial r = .18 versus - .07 for males). In addition, the variation in alcohol use was quite limited in Arizona, where the vast majority were drinkers.

Regarding both alcohol and marijuana use, religious attachment and conventional values showed more independent effects in Utah than Arizona. Marijuana was the only drug indicating a gender difference in Arizona, with females less affected by educational attachment than males. Educational attachment is more relevant to marijuana use among females in Utah.

Amphetamines had slightly varied findings. There was somewhat more of an independent effect of educational attachment among females than among males in Arizona. There was only a slight hint of the same gender difference in Utah. Religious attachment and conventional values, were not more important in Utah and were barely higher in Arizona. Other gender differences and geographic differences were absent.

There was not much variation in cocaine use in either state. There were no consistent differences by gender or location. Only drug-using friends seemed to be related to cocaine use, with the association being strongest among males.

Conclusion. Parental attachment was especially relevant in females for alcohol use, but the differences were too slight to suggest more than a call for further investigation between gender and parental attachment. The only other gender differences involved educational attachment, but in inconsistent ways. Poor school ties were more predictive of female amphetamine use in both states, and female marijuana use in Utah.

Religious attachment was the only independent variable found at a higher absolute level in Utah than in Arizona, but there were no cross-state differences in absolute levels of conventional values, educational attachment, or parental attachment. However, conventional values and religious attachment were more salient in Utah in terms of strengths of association with drug use. A moralistic drug prevention program would be less likely to succeed in Arizona than in Utah. In addition, such a program would be more successful in Utah relative to alcohol and marijuana use than to amphetamine and cocaine use.

Peer pressure is clearly the most important factor leading to drug use in this study, especially in Arizona. A firm anti-drug personal value system, or a social context where personal values are seen as appropriate in decisions about drug use, as in Utah, can deflect the impact that peers have on one's drug-using behavior.

In general, educational attachment, while not absolutely higher in Arizona, seems to be more relevant to drug use, especially for marijuana and amphetamines. Where drug use is a moral issue, personal decisions about drug-use are more likely to be made on moral grounds, which makes is more of an issue in Utah than in Arizona. For Arizona, the practical link between school related consequences and drug-use was evidently more important in the decision-making process.

Location clearly makes a difference in explaining or predicting adolescent drug-use in Utah and Arizona. However, Arizona findings may be more generalizable as it seems that Utah's less secular, more traditional sociocultural environment is relatively unique.

MOTT, FRANK L., and HAURIN, R. J. 1988. Linkages between sexual activity and alcohol and drug use among American adolescents. *Family Planning Perspectives* 20(3):128-136.

Adolescent substance use and its possible linkage with other adolescent behaviors (such as sexual intercourse) may be the single most important issue on any social policy agenda involving contemporary youth. National representation data describing adolescent activities and their potential linkages are quite limited. The period of adolescence is viewed as a time of transition and uncertainty in which youths generally make their first attempts at acquiring adult status by engaging in quasi-adult activities. Few studies have actually established the statistical norms, much less the social norms, defining appropriate ages for beginning such activities, especially as these norms may differ by gender, social class, race and ethnicity. Levels of alcohol and marijuana consumption are lower among females than among males, and young women generally begin to use cigarettes, alcohol and other drugs at a later age than do young men. In addition, female adolescents report higher initiation ages for sexual intercourse than male adolescents. Although most evidence points to gender differences narrowing over time for sexual experience and substance use, data also support the idea that young women and men attach different meanings to sexual experience, and that factors influencing substance use show different pattern for females and males.

To explore this linkage, retrospective data were analyzed from the National Longitudinal Survey of Youth Labor Market Experience (NLSY). The original sample included 12,200 young women and men (14-22 years of age) remaining with the study and completing repeated interviews through 1983 (at which time they were 18-26 years of age). The subsample used for this study was restricted to respondents 19 or older in 1983, was evenly divided between females and males, and included an overrepresentation of African Americans, Latinos and economically disadvantaged whites. Drug-use questions were asked in 1984, alcohol-use questions were posed in 1983, and questions about age at first intercourse were asked in both years.

Results. Half of females and three-fourths of males had sexual intercourse by age 19. A substantial minority used marijuana, prior to turning 16 (25% for females and 33% for males). A majority of females first used marijuana before age 19, and a majority of males did so before age 18. Six percent of each gender reported having used a drug other than marijuana by age 16. The level of other drug use was lower among females than males for all drugs, with the possible exception of amphetamines, which are more likely to be used by females for weight reduction at age 16. However, at younger ages only very small proportions of adolescents used a drug other than marijuana.

The great majority of both genders, but more adolescent females (89%) than adolescent males (78%), said they had not engaged in any of these activities by age 14. By age 19, total noninvolvement had steadily declined to 15% female abstainers and 8% male abstainers. For younger adolescent females, the most common patterns of practice (aside from total noninvolvement) were to have only smoked marijuana, or to have had sexual intercourse but no drug involvement. In the intermediate ages (16-17), a relatively substantial proportion of young women, acknowledged having used marijuana or alcohol (or both) but reported no sexual involvement. Further, a small subset of intermediate age adolescent females had engaged in sex but reported no drug or alcohol use.

By age 17, only 8% of young women had ever used marijuana and alcohol and had engaged in sex. Not until age 19 did a substantial proportion of young women (about one-third) report having ever engaged in all of these activities, with another one-fifth, reporting sexual intercourse and using either marijuana or alcohol.

The progression pattern for female adolescents is quite similar to that for males, though all stages take place a bit later. Smaller proportions of females than males, engaged in several types of behavior at early ages. Levels of intercourse, alcohol consumption, and drug use among females by age 17 are similar to levels among males by age 16. The initial use of marijuana also peaks at age 17 for females, but continues to increase through age 18 for males.

As other studies have observed, the initiation rate for alcohol consumption (monthly and weekly) rose sharply between ages 17 and 18, reflecting the fact that in the 1970s and early 1980s, the consumption of alcohol typically became legal at age 18. Rates of marijuana initiation reached relatively high levels at rather youthful ages, but did not climb suddenly at a specific age, as was the case with alcohol. Data on sexual initiation among alcohol and marijuana users consistently showed that young women who use substances at earlier ages may be following less normative behavior paths than their male counterparts, and thus are more likely to engage in the full spectrum of non-normative activities.

The results also suggest that among both females and males, at all but the very youngest ages, marijuana use and subsequent sexual initiation appear to be more strongly linked than are regular monthly alcohol use and subsequent sexual activity. The link between sexual activity and marijuana use is generally stronger than that between sexual activity and alcohol use. This supports the idea that early moderate alcohol use may be more socially acceptable among teenagers than either sexual activity or early marijuana use, and that sexual activity and marijuana use may be somewhat less acceptable for females than for males.

Conclusion. There is no doubt young women and men, who start using marijuana or consuming alcohol (or in particular, began doing both) at early ages are more likely than their abstaining counterparts to initiate sexual activity within a year, although casual linkage remains unclear. Perhaps the more important conclusion, however, is that young people under age 16 who began using marijuana or alcohol are more likely to remain virgins during the following year than they are to become sexually active.

This research lends little support to the view that youthful "deviant" activities are part of a syndrome that involves large proportions of youth. Certainly, there are some young people who have been involved with alcohol and marijuana, and have been sexually active, by their 17th birthdays (8% of females and 17% of males), however, the fact remains that the large majority of American adolescents are not involved in all these activities at relatively youthful ages. This is not to suggest that adolescent substance use and sexual activity do not represent important social problems. However, to dwell on "syndromes" of deviance that probably affect only modest proportions of young people may be counterproductive from the perspective of developing appropriate youth programs or policies.

NEWCOMB, MICHAEL D.; MADDAHIAN, E.; SKAGER, R.; and BENTLER, P.M. 1987. Substance abuse and psychosocial risk factors among teenagers: Associations with sex, age, ethnicity, and type of school. *American Journal of Drug and Alcohol Abuse* 13(4):413-433.

Data were collected from 2,926 students in the 7th, 9th, and 11th grades in five California county school districts. The sample was roughly evenly divided by gender, and 70% of the respondents were white, although five distinct ethnic groups were represented. Subjects were drawn both from regular schools and from continuation schools. Anonymous survey responses were used to determine how exposure to and the impact of various types of psychosocial risk factors relate to substance use. These risk factors were measured by one or more separate questions related to attitudes, perceptions of social environment, feelings or emotions, and specific behaviors. A unit-weighted, summed index of twelve risk factors was linearly related to use and abuse of cigarettes, alcohol and other drugs, and a composite substance use score. Differential exposure to and impact of risk factors on drug-taking behaviors were tested for differences by gender, age, ethnicity, and type of school attending.

Results. The twelve risk factors selected and tested accounted for 50% of the variance in a measure of general drug use. There were four significant mean differences on drug use between adolescent females and males. Females reported lower use of alcohol and marijuana than did males, as well as showing lower use of all drugs on the composite score. On the other hand, females reported significantly more use of cigarettes than did males. For each drug, there was a linear increase by grade, with older students reporting significantly greater use than the younger students. On composite drug use score, Native Americans and ethnicities falling into the "others" category reported the most frequent use of drugs; whites were the second most frequent users; African Americans, Latinos and Asians followed in that order. Those in continuation school reported higher frequency of use for all drugs except alcohol.

Patterns of exposure were somewhat different than patterns of vulnerability and impact, and can partially account for the status group differences in drug use. Authors found no significant differences on the twelve risk-factor index by gender. The number of risk factors increased significantly by grade level. Native Americans and those in the "other" ethnicity category were exposed to significantly more risk factors than members of other ethnic groups. Students of continuation schools had significantly higher risk factors than those attending regular schools.

Conclusion. The study results emphasize the importance of a multicausal model of youthful drug involvement that does not presume there is one pathway to drug use. Data show that the likelihood of drug use or abuse is directly related to to the number of risk factors to which the adolescent is exposed. Thus, each risk factor is considered as one item in a cumulative ecology of influences associated with increased drug involvement. The risk factor index was not equally effective at accounting for different types of drugs, however. It was most strongly related to alcohol and marijuana, traditionally substances most likely to be chosen by the beginning user. This suggests the possibility that risk factors are most closely related to beginning drug use and that other processes become more important with increased drug involvement.

The risk factor index was strongly related to the frequency of heavy use or substance abuse, suggesting that exposure to none or few of the risk factors may have a protective effect. Those with numerous risk factors were many times more likely to be drug abusing than the total sample. In fact, those with 7 or more risk factors were 6 times more likely to abuse alcohol and other drugs than the total sample. There were some exceptions to this pattern, however. Although females reported more use of cigarettes and less use of alcohol, marijuana and composite general drug use than males, there were no gender differences in the magnitude of correlations between the risk factor index and these four drug measures. Thus, other influences are occurring beyond those incorporated in the risk factor index. Further, females had a lower correlation between the risk factor index and cocaine use than did males, indicating that exposure to risk conditions has a lesser impact on cocaine use for females. Finally, Asians exhibited lower associations between the risk factor index and cocaine and marijuana use than did other ethnic group members. Thus there is some type of invulnerability to psychosocial influences on drug use for Asian adolescents.

NEWCOMB, MICHAEL D.; FAHY, B.; and SKAGER, R. 1990. Reasons to avoid drug use among teenagers: Associations with actual drug use and implications for prevention among different demographic groups. *Journal of Alcohol and Drug Education* 36(1):53-81.

Although research has focused on reasons for using drugs among adolescents, reasons for avoiding drug use are more informative for prevention and education programs. Authors used data collected in anonymous surveys from 2,926 adolescents in 7th, 9th and 11th grades to examine five reasons for avoiding drug use as well as perceived harmfulness of marijuana and alcohol. Respondents were drawn from regular schools and from continuation schools. Responses were compared across each of the demographic groups (gender, grade, ethnicity and school type). Responses were also compared within these demographic groupings as contrasted with the frequency of 6 types of actual drug use (alcohol, cocaine, hypnotics, marijuana, psychedelics, and stimulants).

Results. Total Sample results revealed that alcohol was considered harmful and that marijuana was considered even more harmful. Of five specific reasons to avoid drug use (addiction, disappoint parents, disappoint self, lose friends, punishment), addiction was most often cited (78%) and disappointing self was least often cited (33%). Significant gender differences were found in all levels of response. Females indicated greater belief in the harmfulness of alcohol and marijuana than did males, and females cited all five reasons to avoid taking drugs more often than did males. Five significant differences were found by grade level: 7th graders more often than 9th or 11th graders believed marijuana harmful, and more often cited addiction, losing friends and disappointing parents as reasons to avoid drug use. However, 11th graders reported higher levels of belief in alcohol harmfulness. Regular school students reported higher endorsement of punishment, losing friends, disappointing parents, and marijuana harmfulness than did continuation school students. Finally, ethnic groups varied in citing each of the reasons to avoid drug use, as well as in their perceptions of harmfulness of marijuana.

Correlations between reasons to avoid using drugs (including perceived harmfulness) and actual drug use indicate that marijuana harmfulness was most closely associated with less drug use, followed in decreasing order by alcohol harmfulness, losing friends, disappointing parents, disappointing self, fear of addiction and punishment. A few gender differences became apparent in the correlations between avoidance reasons and use of specific substance categories. Female use of cocaine, hypnotics, marijuana and stimulants was less negatively correlated with fear of addiction than was male use. Female cocaine use was also less negatively correlated with disappointing parents than was male cocaine use. Marijuana harmfulness was more strongly correlated with actual drug use for females than for males on all 6 drug categories. Alcohol harmfulness, however, did not reveal any significant gender differences. Getting punished, losing friends, and disappointing self also showed no significant gender differences when associated with actual drug use. Authors also note some differences among grade levels, school types and ethnicities when associating avoidance reasons with actual drug use.

Conclusions. Demographic characteristics provide important information regarding critical reasons for avoiding drugs. This information should be incorporated into prevention programs. More female students were found to endorse all five reasons for avoiding drugs than male students. Further, females indicated greater belief in the harmfulness of alcohol and marijuana than did males. However, although consistently more females endorsed reasons to avoid drugs, when correlated with actual use, the reasons uniformly had stronger impact on actual male drug use than on female drug use. In all cases where significant differences were found, the females had smaller correlations between the avoidance reason and actual drug use than the males. Actual use of all drugs and perceived harmfulness of marijuana were also more weakly correlated for females than for males. These results may have important implications for decreasing drug use. As shown by this study, endorsement of a reason to avoid drugs is not consistently related to lower drug use among adolescents. Most important are those reasons highly associated with actual drug use and how these differ among different demographic groups. By determining reasons that student have for actually avoiding drugs, actual use can be influenced through the provision of information about and support for these reasons. Prevention programs must be tailored to their audiences to be effective.

NEWCOMB, MICHAEL D.; MADDAHIAN, E.; SKAGER, R.; and BENTLER, P.M. 1987. Substance abuse and psychosocial risk factors among teenagers: Associations with sex, age, ethnicity, and type of school. *American Journal of Drug and Alcohol Abuse* 13(4):413-433.

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PASCALE, PIETRO; TRUCKSIS, F.E.; and SYLVESTER, J. 1985. Regional trends and sex differences of drug use and attitudes of high school students in northeast Ohio, 1977-1983. *Journal of Drug Education*, 15(3):241-251.

Trend analyses are presented on data collected from three large scale surveys using the same instrument during the years 1977, 1980, 1983. The sampled cohort groups consisted of eleventh grade students from various high schools in Northeast Ohio. Frequency of usage, reason for taking drugs, and perceived harmfulness of thirteen categories of drugs are presented and compared with national trend data. Trend data are also presented for age of first experimentation with drugs and for several questions about drug use in the elementary grades. Gender differences in trends for all questionnaire items are analyzed.

Results. Females perceived a greater health risk than males in all thirteen drug categories except cigarettes. The largest difference between the genders was in alcohol, marijuana, and cocaine. Responses to questions about reasons for using drugs did not show dramatic differences. Females reported higher percentages than males of use of cigarettes, aspirin, and amphetamines: for all other drugs, males reported a consistent pattern of higher use than females, across all three cohorts.

Conclusion. Significantly more females than males, consistently across the three cohort years, perceived drugs as dangerous. A direct link is asserted between the females' assessment of the need for a school-based drug program (74%—far greater than males' assessment) and their assessment of greater health risk connected with the use of all types of drugs; furthermore, females' greater perception of drugs as dangerous is also related to their lower incidence of usage. The relatively high incidence of cigarette and amphetamine use among females as compared to males is linked to weight loss motivations. It is suggested that the higher incidence of anorexia among female adolescents as opposed to male adolescents reflects similar motivations and that risk denial may be relatively strong where weight loss is at issue.

SELNOW, GRAY W. 1985. Using a stratified approach in substance intervention and prevention programs among adolescents: An empirical analysis. *Journal of Drug Education* 15(4):327-341.

This investigation seeks to determine whether or not there is a basis for treatment program stratification, according to various adolescent subpopulation categories. Two variables were used: classification variables (gender, age, SES) and operational variances (parental relationships, peer influence, self image, and religiosity).

An unannounced anonymous survey was administered during homeroom period to 3,759 high school students (1,807 females and 1,952 males) in grades 6-12 in a small industrial-based southeastern U.S. city. Some standardized measures were used, other items were pretested and modified as necessary to yield usable data.

Beer drinking in bars and the purchase of beer at grocery and convenience stores is allowed at age 18. Hard liquor is generally banned from bars and restaurants, but may be purchased from package stores at age 21. The majority population were fundamentalist.

Results. The initial review considered bivariate relationships between the Substance Usage Index (SUI) and the seven other classification variables (gender, SES, age), and operational variables (parental relationships, religiosity, self-image and formal group membership). All variables were significantly related to the SUI. Age demonstrated a particularly strong positive relationship ($r = .440$) and fewer females than males were likely to report higher SUI scores ($r = -.137$).

Results of a stepwise multiple regression analysis were connected to explain the SUI. Data from 65% of the respondents provided complete information for all variables and indexes. Age accounted for 21% of variance in SUI, with use increasing with age. Gender and self-image were significant at $P < .001$, but accounted for a small percentage of the variance (1%) with the three variables controlled (parental relationships, peer influence, and religiosity).

Respondent gender and age accounted for enough SUI variance to warrant further consideration. Otherwise, subgroup categories discriminated little.

Stepwise multiple regression analyses revealed that, for both females and males aged 13-19, parental relationships explained the greatest variance SUI. Religiosity explained an additional 7% of variance for females and 5% for males. When parental relationships and religiosity were controlled for, group participation and self image explained a small additional portion of the SUI variance for females. Under the same conditions, only self image explains additional variance for males. Overall, these four operational variables indicated a greater portion of variance for females than males. The only notable break in the pattern is for those aged 10-12, in which self image explained the greatest portion of variance in the SUI, exceeding the other three variables.

Conclusion. Females tend to use alcohol and drugs less than males, and younger adolescents use them less than older adolescents. Little evidence could be found to support the contention that age is ceasing to be an important factor in substance involvement, and that female-male usage gaps have become imperceptibly small. Gender offered no basis on which to differentiate targeted program. Except for the youngest age groups, the data suggest no need for differential intervention and prevention programs. For the younger adolescent groups, results suggest that self-image building features be emphasized in the program.

This study concludes that demographic features are generally important in predicting substance involvement, but there is little to argue for development of separate programs, when examining these particular operational variables. There appears to be uniformity of substance usage predictors for adolescents across gender, age, and socioeconomic status.

TAUB, DIANE, and SKINNER, W. 1990. A social bonding-drug progression model of amphetamine use among young women. *American Journal of Drug and Alcohol Abuse* 16(1&2):77-95.

In most research amphetamines are grouped in a general category of illicit drugs because of the low number of users in small-sample studies. Most adolescent drug research has also involved males. This neglect is especially acute with amphetamines, since evidence suggest a greater proportion of adolescent females use amphetamines than males, for such reasons as weight control.

The impact of the social bond on amphetamine use was studied among a sample of 1,624 adolescent females who participated in the 1984 National High School Senior survey. Social bonding theory has been shown to explain less serious drug use better than use of hard drugs. A model was tested that the difference in prediction may be due to the omission of intervening variables between the bond and serious drug use, such as experience with minor drugs. Included in the model was the notion of drug progression, in which individuals first use minor drugs and progress to illicit drugs. To ascertain whether the bond is mediated through use of less serious drugs, cigarettes, alcohol, and marijuana were utilized in the analysis.

Results. Approximately 19% of the sample reported having tried amphetamines. Of 310 users, 206 began in 9th and 10th grades, and 70 in 11th and 12th. Generally, first use of cigarettes, alcohol, and marijuana preceded or did not follow first use of amphetamines. Alcohol was generally used before or at the same time as marijuana, while amphetamines were rarely taken before marijuana. Marijuana emerged as an intervening variables between cigarettes or alcohol and amphetamines. However, in comparison with other drugs, cigarette use did not clearly support the note of drug progression, as slightly less than half the young women who first used amphetamines in the 11th and 12th grades never smoked.

Correlations between the bonding and drug use variables were negative but low. Among the bonding variables, religious commitment had the only significant direct effect on amphetamines. Religion inhibited or prevented drug use at all levels, although with lessened significance for amphetamines, suggesting that this was a powerful agent of social control for females. On the other hand, when this model was tested on a sample of males form the same data set, religion did not have a significant direct effect on amphetamine use.

Of the drugs, amphetamines had the weakest relationship with the bonding variables. Bonding theory was better able to explain cigarette, alcohol, and marijuana use than amphetamine use. Combining drug progression with social bonding theory substantially increased the explained various of amphetamines.

The majority of the bonding variables significantly influenced cigarette and alcohol use in the predicted negative direction. There were, however two exceptions. Contrary to what social bonding theory would predict, having post high school plans and believing that being successful at work is important increased the likelihood of drinking, possibly as an anticipation by females of participating in the adult world.

Thus it appears that one reason for the lack of explanatory power for social bonding theory for serious drug use such as amphetamines relates to drug progression, as the influence of the social bond is mediated by prior use of less serious drugs. Thus combining social bonding theory with drug progression should yield more explanatory model of amphetamine use.

THOMPSON, KEVIN M. 1989. Gender and adolescent drinking problems: The effects of occupational structure. *Social Problems* 36(1):30-47.

Thompson uses a large, national sample of adolescent drinkers and an occupational indicator of class to determine whether gender effects on adolescent drinking problems are conditioned by parent occupation. He notes what is missing from the literature is an account of whether adolescent female and male drinking problems are shaped by social position, and if so, whether the influences that deserve attention are unique to different groups. Although a few studies have examined whether socioeconomic status shapes gender differences in adult drinking behavior.

Results. Findings show that gender differences in three indicators of drinking problems are largest among adolescents whose parents are episodically or chronically unemployed. Gender ratios are smaller for children of workers, managers, and owners. These patterns persist after substituting a delinquency index for the drinking problem scales. Gender differences in the unemployed population for drinking-related incidents are accounted for by parents' weak controls on males. Attenuated parental supervision does not mitigate gender differences in other occupational groups, suggesting a unique work-related gender influence on drinking behavior. The article discusses possible sources of differential gender and class bias in the drinking scales.

Conclusion. Despite the fact that class and gender have been united to account for a variety of problem behaviors, we know little about the distribution of adolescent drinking problems as shaped by occupational structure. We know less yet about how occupation might shape gender differences in drinking problems. Consequently, efforts by the National Institute on Alcohol Abuse and Alcoholism to target services for special population groups may be imprecise if our matrix includes adolescents of both genders from various occupational groups.

WINDLE, MICHAEL, and BARNES, G. 1988. Similarities and differences in correlates of alcohol consumption and problem behaviors among male and female adolescents. *International Journal of the Addictions* 23(7) 707-728.

A Random Digit Dial (RDD) was used to examine similarities and differences in correlates of alcohol consumption and problem behaviors among a random household sample of female and male adolescents, between ages 12 and 17 in 1981. A total of 124 families participated, including 379 family members, 120 mothers, 85 fathers, 124 adolescents and 50 adolescent siblings. Four domains of adolescent functioning were assessed: (1) reasons for drinking; (2) the individual factors of physical appearance, self-esteem, and distress symptoms; (3) peer functioning; and (4) school functioning.

Results. Several similarities emerged between the two gender groups; these were consistent with previous research. They included a pattern of convergence of alcohol consumption, times drunk in the last year, and delinquent behavior, as well as the salience of peer culture. Comparisons of prevalence rates of alcohol consumption manifested similar proportions of drinkers, although females were less likely to engage in heavier drinking. Specific gender differences in the significance of correlates of use were also found.

ANOVA results suggest that females have lower self-esteem, that males report more social pressure as a reason to drink, and that best friends of males consumed more alcohol than best friends of females, although the alcohol consumption rates among female adolescents and their best friends were of such high magnitude that they virtually mirrored the drinking behavior of one another.

Intercorrelational analyses showed the following gender differences. First, for females but not males, escapist reasons for drinking were significantly associated with an increase in the number of times drunk, lower GPAs, lower self-esteem, and a less positive rating of physical appearance. Similarly, for females but not males, increases in the number of distress symptoms were significantly associated with more delinquent behavior, lower GPAs, a less positive rating of physical appearance, and lower perceived peer integration.

Conclusions. These gender differences are consistent with previous research on the alcoholism-negative affect relationship and may be due to differential socializing practices. Escapist, tension-reducing reasons for drinking in adolescence may be more consistent with stereotyped female response to stress. It is also possible that delinquent behavior and poor school performance may be perceived as more aberrant for females than males, and associated with more distress symptoms.

If these gender differences are supported by future research, differential preventions or interventions based on gender-specific vulnerabilities may be warranted. Programs for female adolescents might target cognitive beliefs regarding the use of alcohol as a selected coping strategy in times of stress, or might include a component which addresses issues pertinent to the causes, and correlates of distress symptoms in addition to problem behavior. Evidence of gender differences in susceptibility to problem behaviors could influence multiple levels of a comprehensive prevention/intervention program. The extant data are limited, but possible prevention/intervention implications suggest such gender differences may merit increased attention.

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